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THE CASE-SYSTEM OF HYGIENE

BOOK VII
DISEASE PREVENTION

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THE CASE-SYSTEM OF HYGIENE

BOOK VII

DISEASE PREVENTION

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PREFACE

(*To teachers.*)

The author presents the following suggestions in regard to the use of this book:

I. It is often advisable to start a lesson by means of a short questionnaire of the last lesson.

II. As a rule a new case should be begun by writing it on the blackboard or reading it aloud a time or two and by assigning it for two or three minutes intensive study, not expecting to secure correct answers, but to promote thought and interest.

III. Written answers to the question following the case mean more intense, individual interest.

IV. The cases need not come in exact rotation. Skipping about a bit secures unstudied cases for starting points.

V. After the presentation of the case a verbal discussion should occur.

VI. When using the case-method instruction may be given in nine *different* ways: (1) by using the cases as motivating and thought-producing devices, (2) by verbal discussion, (3) by reading, (4) by summary, (5) by notes, (6) by causing the pupils to think twice (see below), (7) by review questionnaire as suggested, (8) by test, and (9) by examination,—as time and circumstances permit.

The differing phases prevent monotony and secure thoroughness.

VII. The entire conception of the case-system differs from the conception of the didactic products, in content quite as much as in method. A sincere effort has been made to combat harmful, absurd, and cynical prejudices, such as the ones that nothing

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should be taught about disease or symptoms and that pleasing sentimentalities must be presented rather than the concrete, every-day realities and existing conditions with which one must deal to secure action. Instead we have striven to produce a work which would, "move hands and feet rather than tickle the ear."

VIII. A good way to measure the value of the book is to check it over page by page noting the number of places it functions in experience where no book of didactic conception does function.

IX. Too much emphasis can not be placed on the practice of thinking twice. Each child should be lead by proper encouragement and instruction to think over each case for himself outside of class; that is, to recall what the case was about; to recall the system of the summary which is the same in each lesson; and to piece the lesson together, as much as he can on that basis, using pencil and paper in proper grades, before consulting the book. Finally the pupil should be prepared to ask questions at the next lesson, if there are any gaps in his knowledge. Every pupil should realize the importance of making an effort to think for himself without consulting print when he thinks the second time. He should know that what he thinks up and thinks out for himself on the first review represents mastery and clear gain. Whereas, if he is weak and lazy and never thinks twice or only reads in review, he loses part of what he already has and must repeat and repeat before mastering the lesson. The process of thinking twice is facilitated by the process of thinking once, when the case is first presented. Having thought once, the pupil finds it easier to think twice than he would with the old didactic method which is too often demoralizing to the mind and to the will.

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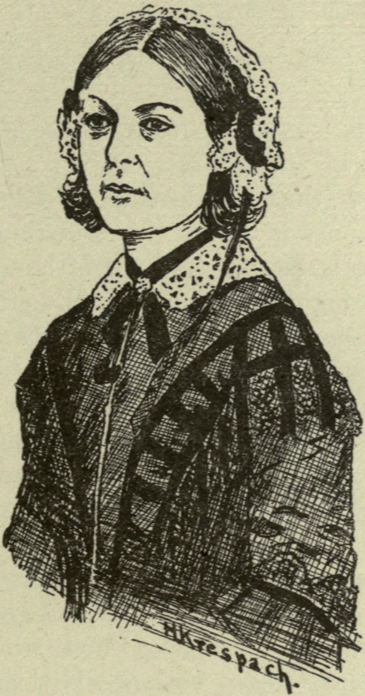


A Great Woman

Of whom is this a picture?

BOOK VII

INTRODUCTORY CASE

The picture is that of Florence Nightingale. Florence Nightingale was a woman who lived in England about fifty years ago. She is famous because of her work in nursing and for establishing the idea that it is all right for a woman to do work away from home. In her time it was thought highly improper for a woman to be engaged in any activity outside of her own home. Florence Nightingale did not agree to that proposition but took up the work of nursing. She studied nursing both in England and in France and learned so well that she successfully reorganized several hospitals in England by the time she was twenty-eight years old.

When she was thirty-four years old England was at war in Turkey, waging the Crimean War. A good many soldiers were being wounded. Of all of those who were wounded about 64 per cent. died. Florence Nightingale thought it would be a very good idea to collect a band of nurses and start for the front. She did so and took charge of the nursing of the soldiers. She and her nurses did their work so well that in a short time only 2 per cent. of the soldiers who were being wounded died. The Red Cross Society came as a result of her work. Since her time the Red Cross Society has looked after all the soldiers wounded in battle. Nowadays we look upon the female nurse as an absolute necessity.

When you remember that in the time of Florence Nightingale she was regarded as an impropriety, you must realize that the human race has a great deal to thank Florence Nightingale for.

The lesson that all of you should learn from her life is that a woman can be great as well as a man. It is quite true that the work of woman should be the making of a home. Every woman can do work in the science of homemaking which of course includes nursing and many other things outside of the home. This work can be of value to every one and may be good enough to win her widespread fame.

The thing that made Florence Nightingale do the things which made her famous was her ideal. She wanted to see how much she could do for the human race instead of how much she could get out of it. I am sure that most of you have that same ideal. Every girl and every boy must turn her or his ideal into practice. No girl must be a loafer. She must work both in and out of her home. Whenever she has an idea that she thinks would benefit other people, she must try it out and not be content to loaf along as a great many women do.

Women have a great deal of influence on the actions of men. Some women admire the sort of man who is intent only on how much money he can make. You must admire the sort of man who tries to see how much he can do for the rest of the human race. You must let him know that you admire him. Then there will be more men like the scientists who are working for the good of humanity rather than for gain.

The poet Longfellow wrote a poem in honor of Florence Nightingale.

SANTA FILOMENA

Whene'er a noble deed is wrought,
Whene'er is spoken a noble thought,
Our hearts, in glad surprise,
To higher levels rise.

The tidal wave of deeper souls
Into our inmost being rolls,
And lifts us unawares
Out of all meaner cares.

Honor to those whose words or deeds
Thus help us in our daily needs,
And by their overflow
Raise us from what is low!

Thus thought I, as by night I read
Of the great army of the dead,
The trenches cold and damp,
The starved and frozen camp,——

The wounded from the battle-plain,
In dreary hospitals of pain,
The cheerless corridors,
The cold and stony floors.

Lo! in that house of misery
A lady with a lamp I see
Pass through the glimmering gloom,
And flit from room to room.

And slow, as in a dream of bliss,
The speechless sufferer turns to kiss
   Her shadow, as it falls
   Upon the darkening walls.

As if a door in heaven should be
Opened and then closed suddenly,
   The vision came and went,
   The light shone and was spent.

On England's annals, through the long
Hereafter of her speech and song,
   That light its rays shall cast
   From portals of the past.

A Lady with a Lamp shall stand
In the great history of the land,
   A noble type of good,
   Heroic womanhood.

Nor even shall be wanting here
The palm, the lily, and the spear,
   The symbols that of yore
   Saint Filomena bore.

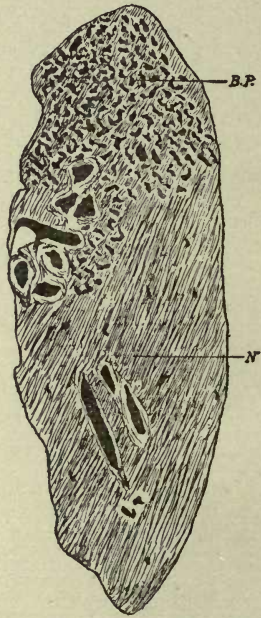
CASE NO. I

Richard E., aged sixteen years, was in the first year at high school. After school he often had more or less headache. The windows of the schoolroom were not kept open and the room usually smelled bad when he came in from the outside. After school he frequently went to a poolroom or a cigar store. He was always clearing his throat and often spat up a bit of mucus. He had had several colds each winter as long as he could remember. He smoked a few cigarettes every day. On December 2d he commenced to cough and his nose felt stopped up. He kept right on with his work. At night he went home and slept with his brother in a small, closed bedroom. He was afraid to open the window for fear of catching more cold. The cold ran along about the same way until the twelfth. Then he began to cough more; his chest felt sore; and hurt him when he coughed. On the fifteenth, he was too sick to go to school and seemed very feverish.

What do you think is the matter with the young man?

DISCUSSION—CASE NO. I

The stopped-up nose and cough that he had on the second of December showed that he had a cold at that time. His getting worse would make you think the cold had developed into some sickness that was worse. The doctor was called and found that the germs which were causing the cold were also attacking the lungs. He had a form of pneumonia called broncho-pneumonia because the germs were attacking both the lungs and the bronchi. You might have suspected



B.P, solid spots of broncho pneumonia; N, normal lung

A lung with broncho-pneumonia

that he had trouble in his lungs from the sore chest and from the fact that it hurt him in the chest when he coughed.

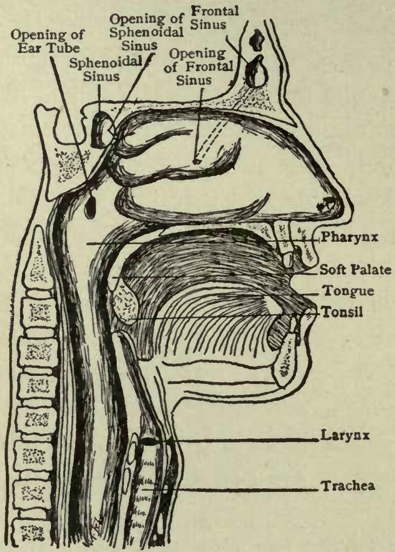
As you know, colds are caused by germs. The germs are spread when people are crowded together. The germs that cause colds start from some person's throat. After a person gets over a cold, he may carry the germs around in his throat and give them to other people. It often happens that children are the ones to get them. The children who are most easily attacked are the children who are weakest or have weakened noses and throats. He had weakened his nose and throat by smoking. Smoke irritates the nose and throat and weakens them. He had weakened himself generally by not getting out and taking exercise instead of going to a poolroom or a cigar store and by sleeping nights with closed windows.

As a rule, colds are not serious but, as in this case, the disease may develop into something else that is worse. Germs, as you know, can travel to the ears, lungs, sinuses, and glands. We look upon colds as unimportant, insignificant things. We look upon ear trouble, lung trouble, and sinus trouble as very serious things. Do not forget that the latter are only colds continued.

The thing to do for an ordinary cold, if it does not get better in four or five days, is to call a doctor. He can prevent some complications. An ordinary cold can be treated at home by remaining in bed, by taking a laxative, by eating plenty of food which you enjoy, and by taking hot lemonade and warm baths to help the kidneys throw off the poison which the germs are making. If he had treated his cold this way when it started, he would not have had broncho-pneumonia.

To avoid colds, you must do two things, avoid germs and keep yourself in good condition. Three things that do both are sleeping with open windows, going to an out-of-door school, and getting out of doors to play. The out-of-door school is a very good thing. It makes schools more healthful and permits less distribution of germs.

The boy recovered from his broncho-pneumonia in about a month. Afterward he stopped smoking, started taking regular exercise, and slept with his window open. This illness had given him a close call and a good scare. For days he had hovered between life and death. Several times it had been reported that he was dead. The next spring he had a pair of chronically inflamed tonsils removed. Since then he has had fewer colds and they have not lasted long.


Opening of Ear Tube
Opening of Sphenoidal Sinus
Frontal Sinus
Sphenoidal Sinus
Opening of Frontal Sinus
Pharynx
Soft Palate
Tongue
Tonsil
Larynx
Trachea

Germs sometimes get from the nose into the different sinuses, such as the frontal sinus and the sphenoidal sinus

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Broncho-pneumonia.
II. Symptoms.	1. Those of a cold. 2. Soreness of chest. 3. Pain in chest upon coughing.
III. Cause.	1. General weakening by lack of exercise and closed windows. 2. Air passages weakened by smoking. 3. Bacteria attacking lungs and bronchi.
IV. Treatment.	1. Call doctor. 2. Rest in bed. 3. Laxative. 4. Food. 5. Hot lemonade. 6. Warm baths.
V. Preventive treatment.	Treat colds in early stage to avoid complications such as inflammation of the ears, sinuses, glands, or lungs.
VI. Prevention.	1. Open windows. 2. Out-of-door life. 3. Open-air schools. 4. Avoiding tobacco. 5. Remedying defects in nose and throat.

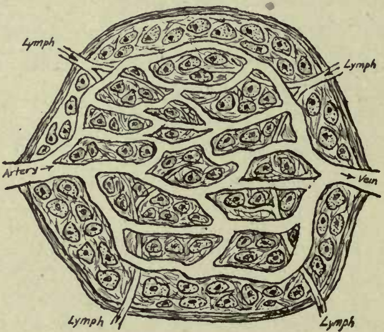
CASE 2

John E., aged nineteen years, was an usher in a moving-picture theatre. He began to cough on November 7th. His nose discharged a little bit. His head felt stopped up and he felt out-of-sorts generally, as one does with a cold. For a week he paid no attention to his cold, save for providing a bountiful supply of handkerchiefs. At the end of that time he was just dragging around, coughing incessantly, and constantly blowing his nose. On the fourteenth, his neck became stiff and was swollen on the right side. He felt feverish and more out-of-sorts than he had before. On the fifteenth, he had to give up work. For ten days he lay in bed running a temperature of about 104 degrees Fahrenheit. As he lay in bed, the stiffness and swelling of his neck increased and several large lumps in the neck became painful, red, hot, and swollen.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 2

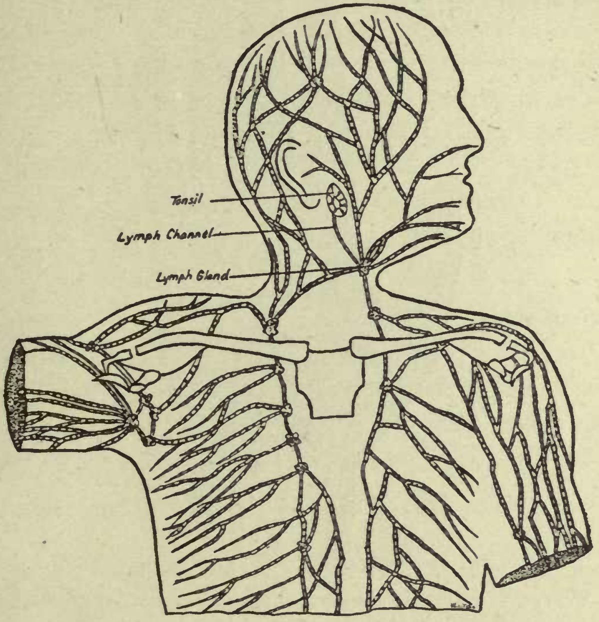
This man had a cold at first. He had a running nose; his head felt stopped up; he felt out-of-sorts; and he provided a liberal supply of handkerchiefs. The swelling on his neck on the fourteenth seemed to be something else. It was a swollen gland that had come from the germs which were causing the cold. The germs had attacked various parts of his nose and throat. Lymphatics drain the nose and throat and empty into the lymph glands. The germs had invaded the lymphatics and the lymph glands.



A diagram of a lymph gland. You can see how the gland would trap germs

He had probably gotten the germs that caused the cold at the moving-picture theatre where he worked. The people there were crowded together. It was a common source of colds. The outlook for him depends altogether on what he does. If he calls a doctor right away and has the glands attended to, he will recover.

A doctor was called, the glands were incised, and a tablespoonful of pus was allowed to drain out. He was about three months getting well and had a close call because, as you see in the illustration, the germs could very easily have traveled down the lymphatics into his chest. Here they would cause trouble in the lungs, and the membrane around the heart. If he had gone to a doctor when he first had the cold or after the cold had hung on four or five days he might not have had all the trouble. Even if he had gone to a doctor when the swollen gland appeared in the neck, applications of antiseptic solutions to the neck might have kept the gland from breaking down and becoming an abscess and probably would have prevented the germs from extending to more than one gland.



The tonsil drains into the lymphatics of the neck

It seems a great shame to allow a public servant who is meeting so many people to be carrying germs to all of them. People who have public places of this kind should be prevented from doing that kind of work when they have a cold.

Lymphatics of the hand (after Sappey). The fine tubes you see running everywhere through the hand are called the lymphatics

To prevent colds and other diseases like colds which are spread from the nose and throat, public buildings should be very carefully regulated. They should be cleaned thoroughly each day they are used and the sunlight should be allowed to play through them. Out-of-door auditoriums are just as good as out-of-door schools. There should be more out-of-door theatres. All public buildings should be well ventilated. That does not mean there should be a hole in the roof to let air out and an occasional opening along the side to let air in. There should be a ventilating system, run with a fan and a motor. The air should be pumped through pipes to small ventilators in the floor. These small ventilators should be located about every second seat. Not only should the theatres have the apparatus, but they should run it.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Infected glands in neck.
II. Symptoms.	1. Those of a cold. 2. Swelling, pain, heat, and redness of glands.
III. Cause.	Cold—Bacteria attacking nose and throat. Glands—Bacteria invading lymphatics and attacking glands.
IV. Treatment.	Incision of glands.
V. Preventive treatment.	Treat colds in an early stage.
VI. Prevention.	1. Isolation of public servants who have colds. 2. Care of public buildings. a. Cleaning. b. Sunning. c. Ventilation.

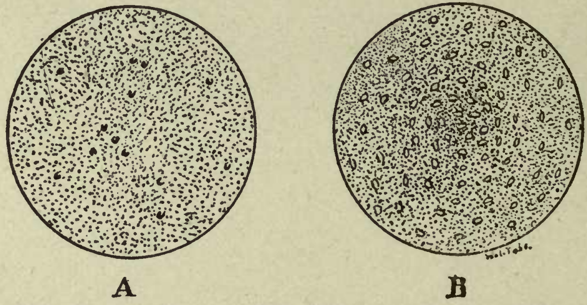
CASE NO. 3

Rachael P., aged five years, began to cough on October 21st. She had a running nose and running eyes and had wheezy sounds in her chest. She was not sick enough to stay in bed nor was her appetite affected. She kept up and played with the other children. At night all five of the children slept in one room. On the twenty-second, she was rather fussy and laid down most of the time.

What do you think is the matter with the girl?

DISCUSSION—CASE NO. 3

This little girl apparently has a cold. She seems to have a particularly weepy appearance. Her eyes and nose are both running freely. That is thoroughly characteristic of measles before the rash comes out. There is always a period of two or three days at the beginning of measles when the child seems to have only a cold. Then the rash comes out. At this time there are often small spots in the mouth which the doctors can find. If they do, they can tell that the child has measles.


A B

These little spots are sometimes found on the inside of the cheek when measles is beginning

No one knows what germ causes measles. From the way the disease acts there is little doubt that it is caused by a germ, but no one has ever discovered this germ. There is no doubt that the nose and throat are the first things attacked. The disease is spread from the discharges given off by the nose and throat, not from the skin. The disease is most catching in an early stage, before the rash has come out. That is why, if one child in a family gets measles, the others usually catch it from that child.

The parents think the child has a cold, while in reality it is in the most contagious stage of measles. That is one reason why it is always a good plan to have a doctor look after a child when it gets a cold. He can often detect measles in this stage. The spots in the mouth are not always present. So, if the doctor fails to discover measles before the rash comes out, he is not to blame.

SUMMARY OF PRACTICAL POINTS

(See end of Case 4)

CASE NO. 4

To save expense these people started to treat the little girl at home without a doctor.

Is there any objection to home treatment?

DISCUSSION—CASE NO. 4

The result of home treatment was that all four children in the family got measles. Three of the children had trouble with their ears and one of them was about half deaf afterward. Instead of spending a few dollars on measles, they spent several hundred on ears, and, worst of all, the child was deaf.

As you have learned from previous cases, ear trouble can usually be prevented. In a case of measles, it is worth while having a doctor. He can help to prevent complications.

The chief distributing place of measles is any closed public room. The one remedy in sight for that is open-air rooms. Another remedy is the early diagnosis of measles. You can see how important the early diagnosis of measles is. The early stage is the most contagious part. That is just the time a child with measles should be discovered and kept away from other children. The only way measles can be kept from spreading in an early stage is to keep a child out of school the first three days he has a cold. As soon as it is noticed that a child is sick with a cold that child and his playthings should be isolated in a room by themselves. Colds are most contagious then and they may be masking something else.

Measles is not a harmless disease. It is apt to be accompanied by complications which will result in permanent injury, such as deafness, and it is often accompanied by diphtheria and followed by tuberculosis. Every child who fails to pick up promptly after measles should be tested with tuberculin to see if he is getting tuberculosis. If he is, tuberculosis will have been diagnosed in a very early stage and can be treated successfully.

Measles is fatal to a great many babies. Babies should be kept from it with great care. The only way to do that is to keep babies away from other people just as much as possible. A child with a cold ought never to be allowed to go into the same room with a baby.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Measles.
II. Symptoms.	Early symptoms. 1. Those of a cold. 2. Discharge from nose and eyes. 3. Koplick's spots. Later—Rash.
III. Cause.	1. Unknown germ probably attacking nose and throat at first. 2. Later whole body is affected. 3. Germ spread in discharge from nose and throat. 4. Germ spread in droplets from noses and throats of people who are immune.
IV. Treatment.	Call doctor.
V. Preventive treatment.	1. Early diagnosis. 2. Isolating children with colds. 3. Tuberculin test.
VI. Prevention.	1. Isolating cases. 2. Guarding babies.

CASE NO. 5

On the night of March 21st, Florence S., aged ten years, had a chill, vomited, and seemed very hot. Her mother gave her a mustard bath and some quinine. This seemed to break the fever, and made her feel better. Afterward she had a cough. Her nose had discharged a little bit and her throat had been sore for the three preceding days. On the twenty-second, she seemed better and played with several of her friends who stopped in after school to see how she was. On the twenty-third, she was much more feverish and complained of soreness in her throat. Several small lumps could be felt on both sides of the neck.

What do you think is the matter with the girl?

DISCUSSION—CASE NO. 5

The little girl has what seems like a cold except that with a cold one does not usually have a chill and the glands in the neck do not usually enlarge. Fever is not usually noted when a child has a cold. It is seldom high enough to be noticeable and is not often discovered before a thermometer is used. These symptoms are typical of the onset of scarlet fever. A chill, with or without vomiting, high fever, sore throat, and enlarged glands in the neck. Whenever the child has these symptoms look out for scarlet fever and isolate him and anything he has been playing with. It is a good plan to be on the watch for scarlet fever whenever a child has a sore throat and to isolate the child. You never can tell whether it is going to be scarlet fever or not. The rash of scarlet fever came out next day. The symptoms show that the germs of scarlet fever were attacking her nose and throat. That is the place they attack first. From there they are spread.

No one has ever discovered the germ that causes scarlet fever. There is no doubt that the germs of scarlet fever are carried around by people who have the disease and are immune to it. These people give it to other people. Not every person who has had scarlet fever carries the germs of the disease around in his throat afterward. Most people do not. The disease is most catching in an early stage while the rash is coming out. It sometimes happens that the germs get into milk in a dairy. Then an epidemic of scarlet fever occurs wherever the milk is sold.

The outlook in scarlet fever is never very bright. The disease is fatal in one case in every eight—in children under five years one in every three or four. It leaves all sorts of permanent injuries behind. Injuries to ears, heart, joints, and kidneys are common. It is a bad disease. The more people who get it, the more it will spread. Never expose a child to any disease so that he will have it and be over with it. He may be over with everything else, too. Prevent every case you can.

As soon as the mother saw the rash she suspected scarlet fever and secured a doctor. She followed his directions and the directions of the Board of Health. Every one who has charge of a person with scarlet fever should do the same thing. A doctor can prevent a good many complications in scarlet fever and can make it easier for the person with it to get well. If you do not follow the instructions of the Board of Health about isolation, the disease will spread and you may be responsible for the death or injury of another.

Some people have the idea that, if all of the children in a family have been exposed when one child comes down with measles or scarlet fever, it is not worth while to keep the exposed children from the sick child. That idea is wrong. A child may be exposed without getting the disease.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Scarlet fever.
II. Symptoms.	A. Early stage. 1. Chill. 2. Vomiting. 3. Fever. 4. Sore throat. 5. Swelling of glands of neck. B. Later—Rash.

	C. Still later—Peeling off of skin.
III. Cause.	1. Unknown germ probably attacking nose and throat at first. 2. Later the whole body is affected. 3. Germs spread in discharge from patient's nose and throat. 4. Germs spread in droplets from noses and throats of people who are immune. 5. Germs spread in milk, sometimes.
IV. Outlook.	1. Over four years—fatal to one in eight. 2. Under four years—fatal to one in four. 3. Many bad consequences.
V. Treatment.	Call doctor.
VI. Preventive treatment.	Obey Board of Health.
VII. Prevention.	1. Same as colds. 2. Vaccine.

CASE NO. 6

This girl was taken to a hospital where she remained seven weeks. The other children in the family were kept out of school two weeks. None of them had the disease then and it was thought that they were not going to have it. Charles, the oldest boy, who was in the eighth grade, had a cold but was not at all sick. So, they went back to school.

Do you think it is wise to let the children go back to school?

DISCUSSION—CASE NO. 6

It was very foolish to let them go back unless all were absolutely well. Charles was having walking scarlet fever. He was having the disease without having any rash. That often happens. Then the walker walks around giving the germs to others. He gave the disease to eight others in the eighth grade. Two of the girls who had been to visit Florence had it and one of them died. They visited at just the right time to catch scarlet fever. People fear the scales. The discharges from the nose and throat are the things to be feared. They are present in an early stage, the scales in a late stage.

The prevention of the disease depends upon an early diagnosis of it. Unless the disease is discovered in an early stage the other children in a family are pretty sure to get it. Therefore, you must know the early symptoms and look out for them. As soon as the disease is suspected, the suspect and anything he has handled lately should be isolated. It is a good plan to keep any child with a cold away from the other children. You never can tell when a cold is going to develop into something else. It does no harm to isolate a child for a few days and let him out again, if the disease fails to develop. It may do a lot of harm not to as in this case. If this girl had been isolated when she had the chill and vomiting, the epidemic might never have occurred.

The Russians have a vaccine which they claim will prevent scarlet fever. If scarlet fever is raging in your neighborhood, it might be worth while to try it. Another thing that can be done to prevent the disease is to get pure milk. We shall consider that question later. Another thing is to have open-air schools. We have already considered that question. Scarlet fever can be passed around open-air schools as well as closed schools but probably not as freely.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Walking scarlet fever.
II. Symptoms.	1. Those of a cold. 2. History of exposure to scarlet fever.
III. Cause.	Having scarlet fever in mild form without having any rash.
IV. Treatment.	1. Treat as a dangerous case of scarlet fever.
V. Preventive treatment.	1. Early diagnosis. 2. Isolation of children with colds.
VI. Prevention.	1. Vaccine used by Russians. 2. Pure milk. 3. Open-air schools. 4. Isolation of cases.

CASE NO. 7

Isabelle C., aged four months, was a very cute baby. She was such a fine baby that her mother liked to exhibit her at every opportunity. Other mothers came in practically every day and brought their children with them. Mrs. C. took the baby to the moving pictures about once a week. On November 14th, the baby began to cough. It coughed rather hard for a minute or two and then stopped. This performance was repeated several times a day. On the fifteenth and sixteenth, the baby coughed harder. On the seventeenth, it vomited two or three times after a coughing spell. On the eighteenth, it vomited in the same way and got blue in the face during the coughing spells.

What do you think was the matter with the baby?

DISCUSSION—CASE NO. 7

Here is another baby that seems to be having a cold but there is something that is a little bit unusual for a cold. When a baby has a cold the cough usually does not come in spells. The baby coughs a little now and then but it is more or less of a continuous performance. Vomiting after having a coughing spell is very suggestive of whooping cough. Getting blue in the face during a coughing spell is suggestive also. Babies have whooping cough before the whoop develops. There is an old saying that a child is two weeks getting whooping cough, two weeks having it, and two weeks getting over it. On the twenty-fourth, this baby began the whooping which comes with whooping cough. A child sometimes has whooping cough without ever getting a whoop.

A scientist by the name of Bordet claims to have discovered the germ, the Bordet bacillus, which causes the disease. The disease like measles, scarlet fever, and colds is carried around in the throats of people who have had the disease and are immune to it. It is also spread from the noses and throats of children who are having the disease. In this case the baby probably got it from the people who came in to visit. Babies ought not to receive many visitors. Kissing the baby should not be permitted any one except the parents.

Whooping cough is very hard on babies. Babies usually die if they catch the disease. They get so weak from the paroxysms of coughing that the disease kills them. The thing to do for this baby is to get a doctor. Although there is no remedy that will cure whooping cough in the way antitoxin will cure diphtheria the doctor can do enough to make having him worth while. He can give the baby medicine to make the whooping and coughing less violent and can see that a binder is properly adjusted around the child's abdomen, so that he will not wrack himself so much when he coughs. This baby died on the thirteenth.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Whooping cough.
II. Symptoms.	First stage. 1. Paroxysms of coughing. 2. Vomiting. 3. Change in cells of blood. Second stage. 1. Same symptoms plus whooping. Third stage. 1. Same symptoms. Whooping disappearing.
III. Cause.	1. Bordet bacillus attacks air passages. 2. Bacillus spread in discharge from noses and throats. 3. Bacillus spread in droplets from noses and throats of people who are immune.
IV. Treatment.	1. Call doctor. 2. Binder.
V. Preventive treatment.	Treat whooping cough in an early stage.
VI. Prevention.	1. Isolation of case. 2. Guarding babies.

CASE NO. 8

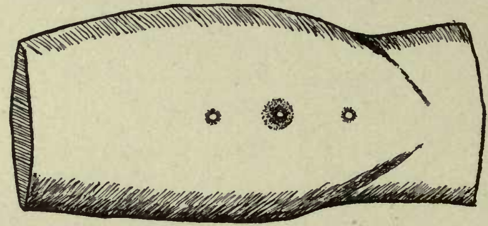
In February Frank C., aged eight years, started in with whooping cough and was sick with it until the middle of March. Whooping cough seemed to make him very weak and thin. It was now the middle of May and he did not weigh as much as he had in January. He looked rather pale, had a poor appetite, did not care to play as much as he did before he was sick. He had been so poorly that his parents kept him out of school. It seemed to his mother that he had not grown a bit since the measles struck him.

What do you think was the matter with the boy?

DISCUSSION—CASE NO. 8

In a previous case, we have learned that, after measles, tuberculosis is very apt to come. The same thing is even more true of whooping cough and even more true of the combination of measles and whooping cough. This child should be tested with tuberculin to see whether he has tuberculosis or not and he should be examined carefully by a doctor.

The child was tested with tuberculin. A little tuberculin was scratched into the skin of his arm and two other places were scratched the same way without putting any tuberculin on them. In a day the place with the tuberculin in it became a little red and swollen. The other two places did not change at all. So, they knew that he was getting tuberculosis. Consequently, he was sent to a home in the country where he was treated for tuberculosis. In six months he was entirely well. That is what happens in the case of a child who has tuberculosis, if the disease is treated in an early stage.


A positive tuberculin test

As you see, whooping cough often leads to tuberculosis. It is responsible for more deaths than measles and scarlet fever put together. The prevention of it depends on getting it diagnosed in an early stage and on isolating children with it before they give it to others. The rule of always isolating a child at home who has a cold will prevent trouble in the home. Do not get the idea that children have to have these diseases. The fewer children who have them, the fewer deaths and deformities there will be from them.

We learned before that an early diagnosis of whooping cough must be made to prevent its spread. A thing that will help to make an early diagnosis of the disease is the blood test. When a child has whooping cough, a certain kind of white cell in the blood is increased in number. This happens before whoops come. Every Board of Health should be prepared to make these blood tests so that people can have them done free. The people in one western state pay only ten cents per person to its Health Boards each year. If your Health Board is a ten-cent Health Board, the chances are that it will not be prepared to make such examinations.

In a short time you will be a voter. You can see to it that you have a good Board of Health. It will pay. If it did not, remember that people are human beings and are to be placed above dollars.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Tuberculosis
II. Symptoms.	1. History of whooping cough or history of whooping cough and measles.
	2. Loss of: weight, color, appetite, growth.
III. Cause.	1. Measles and whooping cough lower child's resistence.
	2. Then germs of tuberculosis attack him.

IV. Treatment.	1. Tuberculin test. 2. Out-of-door life. 3. Rest. 4. Feeding.
V. Preventive treatment.	Tuberculin test after measles and whooping cough.
VI. Prevention.	1. Prevent measles and whooping cough. 2. Provide good Boards of Health.

CASE NO. 9

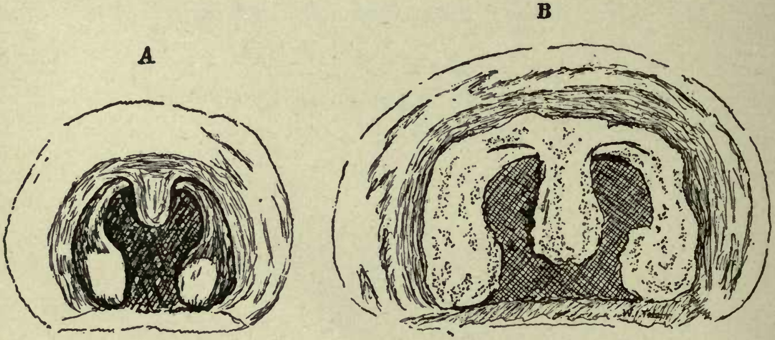
Robert C., aged nine years, came to school February 9th with a running nose and a cough. On the tenth and eleventh, the cough was worse and he kept feeling more and more indisposed. On the night of the eleventh, he had difficulty in swallowing and his throat felt rather sore. On the twelfth, he had some difficulty in breathing and more difficulty in swallowing. He felt too sick to get up on the thirteenth but his father said he ought not to stay in bed and give up to a cold. So, he was packed off to school. The teacher noticed that he was pale and weak and too sick to hold up his head. She sent him home.

What do you think is the matter with the child?

DISCUSSION—CASE NO. 9

The child seems to have a cold but he is too sick to have only a cold. The trouble in swallowing, and having such a sore throat, does not go with an ordinary cold. A child with just an ordinary cold is not too sick to get up. At school the teacher looked into the child's throat. She found that a gray substance extended like a veil over the tonsils and soft palate. This grayish substance was the membrane of diphtheria.

Meanwhile, the child had been coughing the germs out and other children had been breathing them in. Some people are immune to the germs of diphtheria and carry them in their throat all of the time. Such people are called carriers.



The membrane of diphtheria in an early stage and in a late stage of the disease

The outlook for the boy depends altogether upon what is done for him. If he is given antitoxin right away, the chances are that he will get well speedily. He was taken to a contagious hospital and given several doses of antitoxin.

The membrane had all disappeared in two days and he felt very much better. Then the doctor at the contagious hospital started collecting germs from his throat and growing the germs in an incubator. For three weeks the collection of germs from the boy's throat always contained diphtheria germs. Then they decided to spray some more germs of another kind into his throat. After these germs had been sprayed in three times, the germs of diphtheria were driven out. So, when the boy went home, he did not go home to carry diphtheria germs to his brothers and sisters and other children. Every case of diphtheria should be treated with antitoxin, isolated in a contagious hospital, and freed from germs before leaving. When those things are not done, a great many deaths will result.

A small dose of antitoxin heads off the disease in exposed children. The thick skin reaction tells whether any exposed child is immune and needs the serum.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Diphtheria.
II. Symptoms.	1. Those of a cold. 2. Sore throat. 3. Difficulty in swallowing. 4. Difficulty in breathing. 5. Sicker than with a cold.
III. Cause.	1. Germs of diptheria attacking nose and throat. 2. Poison made by germs circulating all over the body. 3. Germs spread from noses and throats of carriers.

IV. Treatment.	Antitoxin.
V. Preventive treatment.	1. Early diagnosis by means of cultures.
V. Preventive treatment. (*continued*)	2. Early administration of antitoxin.
VI. Prevention.	1. Isolation of cases. 2. Shick reaction and and antitoxin for exposed cases. 3. Cultures from recovering cases.

CASE NO. 10

The City of B. spent $20,000 for a new contagious hospital. After the hospital was erected, a good many children who had measles, scarlet fever, diphtheria, and whooping cough were sent there. Doctors soon gave up using the hospital because they found that a child who was sent to the hospital with scarlet fever was very apt to get measles or whooping cough before leaving; a child with whooping cough was apt to get diphtheria or chicken pox; and so on. The contagious hospital seemed to cause about as much disease as it prevented.

What was the matter with the contagious hospital at B?

DISCUSSION—CASE NO. 10

The contagious hospital at B. was not conducted properly. They had wards. Wards in a contagious hospital are bad things. At this hospital they divided the cases up into four wards. If a case came in with measles, it was admitted to the measles ward at once. Likewise with scarlet fever, diphtheria, and whooping cough. Oftentimes it was found that a case that was thought to be measles, in the beginning, turned out to be scarlet fever. Then several of the children in the measles ward would get scarlet fever. The cases that came in with diphtheria were always developing some other contagious disease later and giving it to the other children in the ward. From the time a person catches the germs of any disease until it breaks out, there is a period of several days or weeks. This period is called the incubation period of the disease because the person's body is incubating the germs. Children who were admitted for one thing would often be incubating another. The children who had measles often had whooping cough before they left and so on. In this way different diseases were passed around very freely.

There are two things that can be done to remedy this criss-crossing of contagious diseases within a contagious hospital. One of them is to have separate admitting rooms where every new case that comes in stays by itself about a week until the doctors can tell what the trouble really is. Another thing is not to have wards where the children are all together. In the best contagious hospitals, each child has a small room to himself which has glass walls around it so that any one child can see the other children and will not be lonely. At the same time he will not expose any one else to the disease he happens to be having. If a sick child is lonely, it makes him worse.

Contagious hospitals are very bad things, if they are run poorly. If a contagious hospital has admitting rooms and has no wards but has separate rooms for each patient, it is a very good thing.

The home isolation of contagious cases is very unsatisfactory. It keeps older people away from their work and the other children in the family are almost always exposed and infected. Consequently, the loss in death and deformity from home isolation is greater. Hospital isolation is better, if it is a good hospital isolation. Otherwise it is worse.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Improperly conducted contagious hospital
II. Symptoms.	Cross-infection.
III. Cause.	1. Mistaken diagnosis. 2. Diseases still in incubation period.
IV. Treatment.	1. Each case in a separate room. 2. Admitting rooms
V. Prevention.	Hospitals with separate rooms for each case.

SUMMARY NO. I

The last ten cases have all been about contagious diseases which are easily passed from one person to another by the discharges from the nose and throat. We have studied colds, measles, scarlet fever, whooping cough, tuberculosis, and diphtheria. We have learned what each one of us can do to prevent these diseases and what the community can do to prevent them. The first two cases were about colds. From them we learned that colds are caused by germs that attack the nose and throat. The way to prevent colds is to keep yourself in good condition and to avoid germs. You can keep yourself in good condition by having regular habits, especially those of out-of-door exercise, eating and sleeping; by sleeping with your windows open; and by avoiding things which injure the nose and throat, such as smoking. The germs that cause colds are spread in crowded places, such as street-cars, theatres, and churches. The spread of germs in these places can be prevented by making them as much like out of doors as possible. Another thing that will keep down the spread of germs in these public buildings is to wash the buildings thoroughly whenever they are used and to disinfect them with sunlight. Sunlight is a great destroyer of germs. Public servants who have colds should not be allowed to spread them among the audience in public places. They should keep away from their places until their colds are well.

A cold may be a serious thing because of the complications which may follow it. Consequently, it is a good plan not to ignore a cold but to treat it as soon as it starts and avoid complications.

The third and fourth cases were about measles. Most people regard measles lightly. They think it is a good thing for a child to catch the disease and be done with it. This is a great mistake. Measles is fatal to a great many children under five years of age and a goodly number who are older than that. It deforms a great many more.

The only thing you can do to prevent measles is to avoid it. The reason it is not avoided more is because it is not recognized more in an early stage when it is most contagious. The symptoms of measles before the rash develops are those of a cold plus a very weepy appearance. Every child who has a cold should be kept away from other children for the first three or four days until the parents can tell whether the trouble really is a cold or whether it is measles or some such disease. That simple rule will keep the other children in the family from getting infections. The same thing applies to the schoolroom. No child should come to school the first two or three days it has a cold.

Good contagious hospitals keep measles from being spread around the community. If the child is isolated at home, the other children get the disease as a rule because home isolation is not perfect enough. Remember that tuberculosis is apt to follow measles. If a child fails to pick up after measles, have him tested with tuberculin to see whether he is in an early stage of tuberculosis. If he is, that is the time he can be cured.

The fifth and sixth cases were about scarlet fever. In cases of scarlet fever it is always well to be on the lookout for a child with walking scarlet fever. Children sometimes have the disease without being sick at all and without having any rash. They just seem to have a cold. When there has been scarlet fever in the family and one of the children seems to have a cold keep him away from other children until the cold is entirely well. Try to discover cases of scarlet fever before the rash comes out. Sore throat, fever, vomiting, and swollen glands should warn you. As soon as you suspect any contagious disease isolate the child and anything he has handled.

The seventh and eighth cases were about whooping cough. Whooping cough is very hard upon babies. Therefore, keep babies away from people, especially children with colds. Remember that tuberculosis is very apt to follow whooping cough or measles or the combination of whooping cough and measles. If a child fails to pick up promptly after either of these diseases or both of them, have him tested with tuberculin and examined.

The ninth case was about diphtheria. Antitoxin cures diphtheria. It is effective, if administered early in the disease. The only way to get cases of diphtheria diagnosed before the membrane appears is to take a culture from the nose and throat of every child who has a cold. That is worth doing. It ensures a careful examination of the nose and throat as well as letting one know whether diphtheria germs are present or not. Antitoxin can also be used to prevent disease. If one child in a family has it and the others have been exposed, the exposed ones can be given a little antitoxin, if they are not already immune. The Shick reaction will tell you whether the others are immune or not.

The last case was about a contagious hospital, a bad contagious hospital. It was intended to illustrate the point that bad contagious hospitals are bad things and good contagious hospitals are good things.

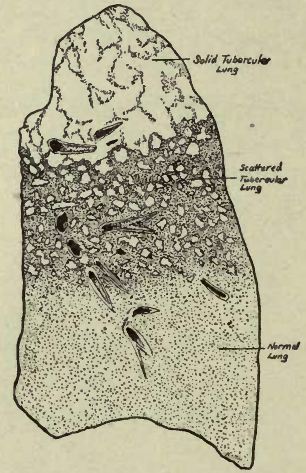
CASE NO. 11

Jeremiah E., aged twenty-two years, caught a cold. He kept right on working in the bridge works, although he felt miserable and had a cough that hurt his chest and wracked both chest and abdomen when he coughed. His mother wanted him to stop work when he had been coughing for about three weeks. She told him that his father had contracted consumption after a cold. He continued working although he found it hard to do his work and his appetite was poor. At the end of two months, he was still coughing; his appetite was very poor; he looked thin, haggard, and pale; and was so weak that he had to drag around at his work. He felt feverish at night and was completely done up by his day's work when he came home in the evening. Formerly he had felt like dancing, boxing, skating, and things of that sort in the evening. He felt so blue and melancholy that he got into the habit of stopping into a saloon on his way home from work and drinking a couple glasses of whiskey. This made him feel less uncomfortable during the evening. For two months he could not notice any change in himself and thought that he was getting better.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 11

Tuberculosis germs were attacking the man's lungs. The cells in the lungs were fighting back and as the two waged battle, secretions were formed in the lungs just about as they are when you have a cold in the head. They were running from the lungs somewhat as they run from the nose. In the illustration you can see how the germs make the lungs solid and finally destroy them. The wasting away was due to the fact that the poisons made by the germs which were working in his lungs were circulating to all parts of his body.



Normal lung and tubercular lung

Tuberculosis germs cause tuberculosis. To finish a person, they almost always have to be helped along in some way. In this case, they are helped along by alcohol. That often happens. If the man had not had his senses taken away by alcohol, he would have taken care of himself in the first place.

He probably got the disease while working in a very crowded, poorly ventilated shop, where other men who had the disease would cough the germs up into the air which he breathed.

There is nothing that will prevent tuberculosis in the way vaccination will prevent smallpox. Almost every person has had tuberculosis. Most people have had it in such a mild form that they never knew it. It probably affected a few lymph glands only. They were in such good condition that they threw the disease off right away. The great thing to do then in preventing tuberculosis is to keep in good condition. Of course, it is very foolish to expose yourself to tuberculosis germs or to allow people with tuberculosis to scatter the germs. People who have the disease should be away from other people, if they are spitting up germs. Any sputum whatever, whether from tubercular or non-tubercular people, should be spat either upon the earth or into paper and then burned up.

Sputum containing tuberculosis germs
magnified 1,000 times

Every one should have pure air. Impure air in factories and buildings should not be tolerated; nor should factories be allowed to pollute the air of the city. People should not be allowed to pollute one another's air by being herded together in tenements. Whenever you go to the city you see row after row of buildings all built next to one another with no space between and no yards. Whenever you see that you may be sure something is wrong.

Every house in which people live should have a space around it and a yard around it. In cities there should be plenty of parks and the streets should be broad with a strip of grass going down the middle of the street.

A great many people die from tuberculosis. Most of this can be prevented. If you will see to it that people are treated in an early stage; that they have a chance to keep themselves in good condition; that sputum is properly disposed of; and that people are not huddled too closely together, you will prevent many cases of this and other diseases.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Tuberculosis.
II. Symptoms.	1. History of tuberculosis in family. 2. Cough. 3. Loss of: appetite, weight, color, and strength. 4. Fever.
III. Cause.	1. Germs of tuberculosis attacking lungs.

III. Cause—*continued.*	2. Poisons made by germs circulating all over body. 3. Alcohol also weakened the man. 4. Germs spread in poorly ventilated places.
IV. Treatment.	1. Rest. 2. Feeding. 3. Living out of doors.
V. Preventive treatment.	1. Early diagnosis by every one. 2. Early treatment.
VI. Prevention.	1. Avoid alcohol. 2. Burn sputum. 3. Good ventilation 4. Good housing.

CASE NO. 12

Let us see what the outcome of this case was.

The cough persisted and he was still far from being as strong and well as usual. About this time he noticed that it was almost more than he could do to get through with a day's work. One of his friends told him that he ought to take a little drink before breakfast for his appetite. So, he got a pint bottle of whiskey and commenced taking a drink before breakfast. For another two months he managed to keep up. The cough persisted and the number of drinks each day became larger and larger. The whiskey made him forget his weakness and lethargy. When he coughed it did not hurt him so much in his chest.

At the end of about seven months he looked thin and pale, coughed frequently, and ate almost nothing. At night he was so hot that he frequently woke up wringing wet with perspiration. About this time he was discharged from the bridge works. He had become drunken enough so that he was not at all sure of getting his work done or of being at it regularly.

He had been loafing around his home and the saloon for about a week when he had a fit of coughing. Suddenly he gulped up a mouth full of blood.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 12

The man is having a hemorrhage from the lungs. The only thing one can do is to keep him quiet. Have him lie down on a sofa or bed and send for a doctor at once. A doctor can give him a dose of morphine, which will quiet him and will make him breathe more easily. That will cause the lungs to move less and there will be less bleeding. A doctor called, gave morphine, and the bleeding stopped.

He seems so weak that he will probably die. He was taken to a sanitarium where he could live out of doors and be fed up. People with tuberculosis cannot take exercise. Any hard work tears them right down. They have to lie in bed or sit in a chair and eat a great deal of food. He lived only a few weeks at the sanitarium.

His first mistake was in not paying attention to the symptoms he had. If you ever see a person who has a persistent cough and suffers from loss of weight, color, appetite, and strength, think of tuberculosis, especially if there is a history of tuberculosis in the family. If it is a child, remember that they get tuberculosis without the cough but have the other symptoms. When anybody coughs up blood suspect tuberculosis and have him examined.

He might have been saved, if he had gone to a doctor sooner. At that time only a small patch of lung would have been affected and it might have healed up at a sanitarium.

Thousands of people die of tuberculosis just as this man did because they fail to recognize the disease in an early stage and have it treated then. You must know the symptoms and you must not dull your brain with alcohol so that it will fail to recognize them when they appear.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Bleeding from lungs.
II. Symptoms.	Blood.
III. Cause.	Germs have destroyed lung and blood vessel.
IV. Treatment.	1. Quiet. 2. Call doctor.
V. Prevention.	1. Early diagnosis and treatment of tuberculosis.

CASE NO. 13

Walter Ames, aged five years, had been taken care of by his aunts for the past three years because the boy's mother was in a tuberculosis sanitarium. For the last two months the child had not been quite as bright and playful as usual. Formerly, he had been a very bright, playful child, always running around and always full of life. Gradually he had become more and more listless and he had come more and more to lie around the house. The aunt had been unable to cook things that he liked to eat. He would not eat his meals and he seemed to look a little bit thin and pale. A friend told the aunt that he could not possibly have consumption, as his mother had, because he had no cough and was not wasting away and was not as pale as a ghost. She told the aunt that the only trouble was that the child had indigestion or had worms.

What do you think is the matter with the boy?

DISCUSSION—CASE NO. 13

The loss of weight, strength, color, appetite, and endurance should make you suspect tuberculosis at once. A child seldom has a cough when it has tuberculosis, because the germs seldom attack the lungs. Usually they attack the lymph glands. The child is usually weak and sickly for from four to twelve weeks and does not grow as rapidly as he should. Then he recovers Sometimes the child does not get over it. This was an attack of the kind of tuberculosis children often have, the kind in which only the lymph glands are attacked. This child was running a temperature; had a positive tuberculin reaction when tuberculin was scratched into his skin; and had enlarged glands in his neck. He must have had tuberculosis.

Probably he got the germs of tuberculosis from his mother who had the disease in her lungs and was coughing them up. No matter how careful a person is who has the disease, if he lives in a house with other people, he is bound to give the germs to them. Whether there is anything about the make-up of the child of tubercular parents that would cause him to be more apt to get the disease than the child of non-tubercular parents we do not know, but we do know that the former gets it oftener. Whether it is only because they are exposed more to germs or not we do not know.

SUMMARY OF PRACTICAL POINTS

(See end of Case 14)

CASE NO. 14

The child's home was in a thickly crowded portion of a manufacturing district, in the town of C. The houses in that part of the town were two or three story wooden buildings, closely crowded together with no yards around them. There were no green lawns. Everywhere the buildings and streets were covered with black soot. The chimneys of the factories poured smoke into the air constantly and there was always the odor of the city and the odor of the factories hanging over this neighborhood. During the day there was a continuous clang and clatter of machinery to be heard. During the night many street cars and wagons could be heard on the street.

Why did the child get tuberculosis?

DISCUSSION—CASE NO. 14

This child might not have had the disease, if he had been living in a good neighborhood. The bad air and smell of his neighborhood made him weak. Whenever you come across a district in the city or country where the smell of the air is bad, you can be sure that that is a bad place for people to live in. The air we breathe ought not to have enough odor to notice.

The outlook for this boy depends altogether on what is done for him. If he can leave the bad neighborhood in which he has lived for a while and get fed up and rested, he will probably recover. If he is not fed up, or if he has to stay in the same place, he may get so bad that the germs will attack his lungs and his intestines and carry him off. He was sent to a home for children, out in the country. After living in the beautiful country place for four months, he was completely well.

Here is a case of tuberculosis that was discovered in an early stage. The aunt did not take the advice of the kind friend to get some worm remedy but went to see a doctor about it. The doctor knew that the child had tuberculosis. In preventing the deaths which occur from the disease, everything depends on having the cases discovered in an early stage. Every one must know the symptoms of tuberculosis in an early stage. They are loss of weight, appetite, growth, endurance, and color. Whenever they occur, find out why by consulting a doctor.

As we learned before, the only way to prevent the disease is to give people a better chance to keep in good condition. One thing that a good many people can do is to move to the country, especially foreign people, who have lived on farms before they came over here. Such people are very poor city dwellers, and die off rapidly when they live in cities. Another people who make very poor city dwellers are the colored folks. They were intended to live in the country. In cities they die off very rapidly.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Tuberculosis.
II. Symptoms.	1. History of exposure to tuberculosis. 2. Loss of weight, color, appetite, and energy. 3. Positive tuberculin reaction.
III. Cause.	1. Germs of tuberculosis attacking him. 2. Probably received germs from tubercular mother. 3. Weakened by living in crowded, dirty neighborhood.
IV. Treatment.	1. Living out of doors. 2. Rest. 3. Feeding.
V. Preventive treatment.	1. Early diagnosis and treatment. 2. Keep in good condition all of the time.
VI. Prevention.	Living out of doors.

CASE NO. 15

Ralph B., aged twenty years, had a cough on the seventeenth of January. He felt a little bit out-of-sorts but not unusually so. On the morning of the eighteenth he woke up with a raw feeling in his throat and again felt rather bad but went out and milked ten cows at the dairy where he was employed. In the afternoon he felt worse and had considerable difficulty in speaking. His head ached and he wanted to lie down. His cough was not very painful. His nose had started to run. On the morning of the tenth, he could just barely make a sound. His throat was very sore, and he felt so much worse that he could not eat any breakfast, but went out and milked his cows just the same. He asked his employer to let him off until he got better but the former said it was just a cold and would go away quicker if he kept on working. That afternoon he milked again. At night he could not sleep. About ten o'clock he began to find it hard to breathe. He had completely lost his voice and had a blinding headache.

What do you think is the matter with the man?

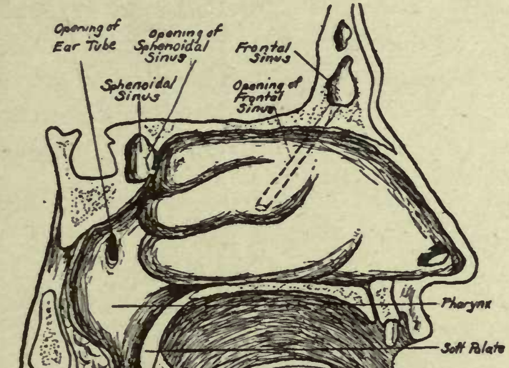
DISCUSSION—CASE NO 15

The out-of-sorts feeling, sore throat, and running nose show that germs were attacking the man's nose and throat. The loss of voice and interference with breathing show that they had probably attacked the larynx and had made it swell up so that it was hard for him to speak or get any air through it. The reason he feels out-of-sorts generally is because the poison of the germs is circulating all over his body. He has a headache because the poison is circulating to his brain, and he is sleepless for the same reason.

The outlook for him depends altogether on what he does. He should have seen a doctor two days before his throat first felt sore and should have had his throat examined then. Several different things can happen to the throat that are very dangerous. The throat may get so stopped up that a person can no longer breathe but chokes. A doctor can both remedy and prevent such things in most cases.

Of course, the man who was sick in this way should not have been allowed to milk cows. He is constantly coughing the germs up into the milk. Even if the trouble were only a cold, he might start an epidemic of colds. As you have learned before, what seems to be a cold is often a much worse disease. Men who are producing milk for people should be inspected. Any who have colds should be excluded from the dairy.

Whenever a person seems to have a cold and breathes as if he had an obstruction in his throat, look out! Abscesses sometimes form in the back part of the throat and make large swellings there. These swellings may shut off the larynx and choke the person or they may burst and allow pus and germs to run down into the lungs. This is especially apt to happen in a child who does not know how to describe what is the matter with it. Have a case of that kind examined by a doctor. He can look down into the throat and see whether there is an abscess or anything of the kind.


Opening of Ear Tube
Opening of Sphenoidal Sinus
Frontal Sinus
Sphenoidal Sinus
Opening of Frontal Sinus
Pharynx
Soft Palate
Tongue
Tonsil
Pus
Larynx
Trachea

This sort of an abscess in the back of the throat may obstruct breathing

SUMMARY OF PRACTICAL POINTS

I. Diagnosis	Septic sore throat.
II. Symptoms.	1. Out-of-sorts. 2. Sore throat. 3. Difficulty in speaking. 4. Headache. 5. Cough. 6. Discharge from nose. 7. Difficulty in breathing.
III. Cause.	1. Streptococci attacking nose, throat, and larynx. 2. Poisons from streptococci circulating all over body.
IV. Treatment.	Call doctor.
V. Prevention.	Keep sick people away from dairy.

CASE NO. 16

Let us see what happened in the last case.

A doctor was summoned. He incised an abscess on one of the tonsils and evacuated about a tablespoonful of pus. That relieved the difficulty in breathing and made the man feel better. On the twentieth he remained in bed. On the twenty-first he was again milking. By the twenty-fifth ten people connected with that dairy were in bed with sore throats. By the thirtieth three hundred people in Boston had it. All of them were using milk from this dairy.

What sort of an epidemic do you think this was?

DISCUSSION—CASE NO. 16

The streptococcus of septic sore throat was found in the throats of the people at the dairy, in the milk, and in the throats of the people in the town. Before the epidemic was over, there had been more than two thousand cases and fifty deaths.

The abscess in the man's throat was not fatal to him; but, as you see, did lead to the death of several other people. He got the germs from his throat to his hands; thence, into the milk where they were passed around. As other people drank the milk, they took the germs into their throats. In this way an epidemic was spread.

Epidemics of various diseases are often spread by milk. Consequently, too much care cannot be taken to get pure milk. Several things are done to accomplish this. One of them is the inspection of dairies by Health Board officials. They attempt to see that the dairy is properly made; that the cows are properly cleaned before milking; that the milkers are clean and take special care about cleaning their hands; that the milk is properly iced after it is taken from the cow; that the milk is put into sterile containers and shipped to its destination. When the milk gets to town, some cities have it inspected again. They examine it to see if water has been added. They have it examined for germs and take the temperature of every can of milk that comes in. If the temperature is high, the germs are sure to be present in great numbers. In most milk there are about 100,000 germs to the cubic centimeter. In the very purest milk there are only 20,000. In impure milk there may be from five to seven million.

All of this inspection is very much worth while because it does prevent a great deal of sickness. In the olden days when there was no inspection of dairies, epidemics were very common.

Still another thing that is done to prevent disease is to pasteurize the milk. That is, after the milk gets to town it is cooked at a certain temperature until all of the germs in the milk are dead. This kills the germs and keeps them from causing disease but does not remove the dead germs. When this is done the milkman does not have to be as careful about producing pure milk. Consequently, the milk is not as good to begin with and cannot be as good to end with. If you suspect your milk is not pure, you can pasteurize it at home by putting the milk in bottles and then putting the bottles into a pail or kettle of luke-warm water. This kettle should be allowed to heat over the fire until it just comes to a boil. Then the kettle should be removed from the fire and the milk taken out in five minutes. As soon as the bottles can be handled, they should be placed upon ice.

Never have any milk around your house in warm weather that is not on ice. If you do, the germs, which are in all milk, will grow very rapidly and the milk will soon become impure. If you have no regular icebox, you can make one for milk out of a tobacco pail, a can, and some sawdust.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Abscess of tonsil.
II. Symptoms.	Difficulty in breathing.
III. Cause.	Enlargement of tonsil obstructed air passage.
IV. Treatment.	Incision of abscess.

V. Preventive treatment.	Keep people who are sick away from dairies.
VI. Prevention.	1. Prevent colds. 2. Inspect dairies and milk. 3. Pasteurize milk.

CASE NO. 17

Agnes O'R., aged six months, began to cough on May 17th. She continued having coughing fits that made her choke for about a month. For these she received no treatment whatever. About June 17th she began to cough so much at night that the parents could not sleep and summoned a doctor. The doctor gave the parents a scolding for neglecting the child and said that it had bronchitis and was getting over whooping cough. The medicine he left did relieve the coughing spells at night. So, he was not consulted again. July 3d, the baby was brought to the hospital. Since the doctor's visit on the seventeenth the baby had coughed less but had had an attack of vomiting on June 25th. After that it had been feverish and apathetic; no longer kicked its bed clothes off at night; and did not cry to be nursed. The only treatment it had had was irregular nursing and rest in its crib. The baby had lost so much weight, color, strength, and brightness that the parents were alarmed.

What do you think is the matter with the baby?

DISCUSSION—CASE NO. 17

After so much sickness, the baby may very well have almost anything. When it was examined at the hospital, it was found to have pneumonia and pus in the chest. When older people get pneumonia there is usually a sudden onset with high temperature, a chill, and vomiting. This may not be the case with a child at all. The disease may come on very gradually.

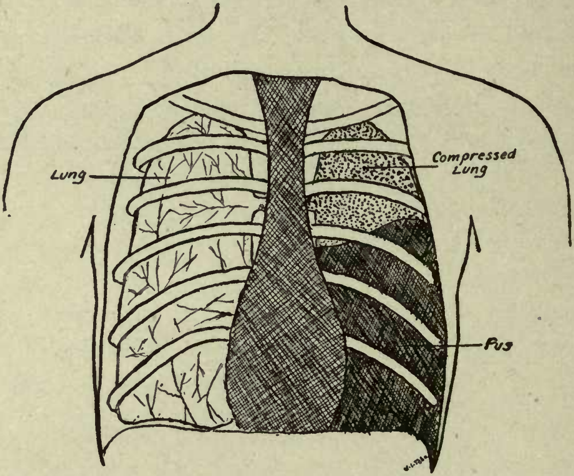


Diagram of an X-ray picture of a collection of pus in the chest, following pneumonia

Pneumonia is caused by the pneumococcus. A great many people have these germs in their throats all of the time. When the people are strong and in good health, the germs do no harm. When people get weak, then the germs attack them.

In a child the outlook for a case of pneumonia is better than it is with an adult. For some unknown reason, chil-

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dren are not as sick and nowhere near as many of them die as do adults.

A doctor can accomplish enough for a case of pneumonia so that it is worth while having him. He can prevent complications and manage the case better than an ordinary person. This baby almost died because no doctor was called. The collection of pus would have resulted in death in a short time. If a baby gets sick, it is a good plan to get a doctor and find out what is the matter.

There is no definite remedy that cures pneumonia in the way antitoxin cures diphtheria or that prevents pneumonia in the way vaccination prevents smallpox. All that you can do to prevent the disease is to keep in good condition.

As a citizen, you can see that every one is provided with good opportunities for keeping in good health and you can see that more research is done on pneumonia. You can see to it that the liquor traffic, smoke nuisance, close housing of people, the poor ventilation of buildings and the overheating of buildings are prevented. You can see to it that parks, playgrounds, gymnasiums, and baths are provided. All of these things will help to prevent this disease, which, during the course of a good many years, kills more people than any other one disease.

This baby had to have a piece of rib cut out to let the pus out of the chest. Pus ran out of the hole several weeks but it finally healed up and the baby recovered.

A collection of pus of this kind can follow any case of pneumonia or broncho-pneumonia. Always bear that in mind, and if a child or any person who has had such a disease fails to pick up afterward, have him examined. Collections of pus such as this also occurs in the middle ear; in the various sinuses that open off the nose; and in some of the glands into which the lymphatics from the air passages and lungs drain. A doctor can be on the lookout for these collections of pus and can usually keep them from doing a sick person any harm. That is one of the chief reasons for having a doctor in diseases of this kind. The only way you can tell whether or not a collection of pus is forming in those places is to have a doctor examine them.

Many scientists would like to work out the prevention and cure of pneumonia. You must provide them with state or private funds.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Pneumonia. Collection of pus in chest.
II. Symptoms.	Variety of symptoms coming from the respiratory organs.
III. Cause.	Pneumococcus attacking respiratory organs.
IV. Treatment.	Call doctor.
V. Preventive treatment.	Have ears and chest examined when a child has pneumonia.
VI. Prevention.	1. Keep in good condition. 2. Abolish liquor traffic, smoke nuisance, close housing, poor ventilation, and overheating. 3. Provide parks, playgrounds, gymnasiums, and baths. 4. Make possible more research by scientists.

CASE NO. 18

Gerald E., aged four years, was restless and feverish during the night of September 10th. Next morning he did not feel like getting up and seemed to have a cold coming on as his nose started to run a little bit. He was given a dose of castor oil. On the twelfth and thirteenth he remained in bed with no particular change in condition. On the fourteenth he began to complain of pain in the right leg. The pain continued through the fifteenth. On the sixteenth the pains were gone. He tried to get out of bed but could not stand unsupported and fell when he tried to walk.

What do you think is the matter with the little boy?

DISCUSSION—CASE NO. 18

The fever and running nose indicate that germs were attacking his nose. The inability to stand indicates that something was the matter with his legs. A doctor was called and discovered that the right leg was partly paralyzed. The disease which comes in children and first attacks the nose and throat while later it produces paralysis of a part is infantile paralysis. In cases of infantile paralysis, the germs enter the nose and throat and go from there either into the blood or the spinal fluid. Then they get to the spinal cord. Here they injure the spinal cord in such a way that impulses are no longer sent to the muscles by the nerves which go out from the spinal cord. As you have learned in previous cases, when impulses no longer go to the muscles and the muscles fail to work they are paralyzed.

Infantile paralysis is spread very much as measles and scarlet fever are spread. The germs get from one child's nose and throat to another child.

Once the disease has destroyed a part of the spinal cord, nothing can be done to repair the injury. After the disease starts, a great deal can be done to keep the spinal cord from being destroyed and to help the child get better. A child with infantile paralysis should be kept in bed six weeks. During this six weeks the spinal cord will have a good chance to heal as much as it will heal. At the end of six weeks, the paralyzed limb should have a massage treatment daily. The massage treatment is a case of now or never. If you wait after the six weeks, the massage does very little good. If the massage treatment is given promptly at the end of six weeks and the child is kept in bed six weeks, it often happens that an almost complete recovery is made. That was done in this case. The little boy was kept in bed for six weeks with a splint on the leg so that it would not become deformed while lying paralyzed. At the end of six weeks the massage treatments were started. At the end of four months the paralyzed leg was almost as good as the other one.

The only thing that can be done to prevent infantile paralysis is to carry out strict isolation of cases and strict quarantine of all children. That means, in an infected district, each child, whether sick or well, must not leave his own yard.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Infantile paralysis.
II. Symptoms.	1. Those of a cold.
	2. Pain along nerves of leg.
	3. Paralysis of leg.
III. Cause.	1. Germs of infantile paralysis attacking nose, throat, and spinal cord.
*IV. Treatment and preventive treatment.	1. Rest in bed for six weeks.
	2. Splints to prevent deformity.
	3. Daily massage treatment.
V. Prevention.	1. Isolation of all cases.
	2. Quarantine of all children.

*Teacher emphasize importance.

CASE NO. 19

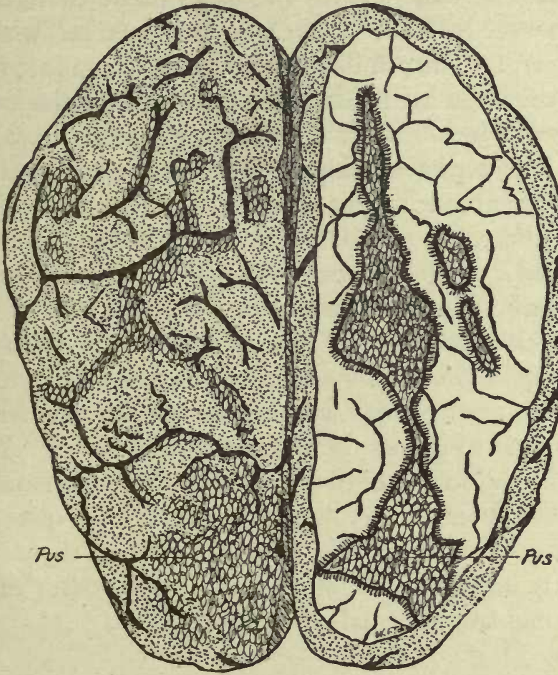
Stanley F., aged ten months, vomited up his feeding on July 20th, and seemed sick and feverish. At the same time he had indigestion. He was fed about twice as much as usual because he cried and seemed thirsty. On July 21st, he did not cry as much and seemed drowsy. The fever and indigestion continued. He vomited several times that day. From the twenty-first to the twenty-fifth his condition did not change except that he became more and more drowsy and difficult to arouse. The only treatment had consisted of pills to stop indigestion.

What do you think is the matter with the child?

DISCUSSION—CASE NO. 19

The child seems to have indigestion except that he is very drowsy. Children who have indigestion are drowsy sometimes but usually they are wide awake and anxious and cry a great deal. The increasing drowsiness ought to make you think there was something the matter with his brain. At the hospital, the doctors discovered all the signs of brain trouble. He had a stiff neck, a slow pulse, the pupils in his eyes would not open and close when light was thrown on them and he had no knee jerks. Other signs were also present. Doctors can often get a good deal of information about brain trouble by drawing off some of the spinal fluid which as you know bathes the brain. In this case, they removed some of the spinal fluid by tapping the spinal canal low down in the back. The fluid was full of pus and contained the germs of spinal meningitis. We mean by the term spinal meningitis an inflammation of the meningies or membrane surrounding the brain and spinal cord. As you can see from the illustration, pus and germs run from the inflamed membrane and get onto the brain.

The disease is spread in just about the same way that infantile paralysis and measles are spread. Flexner's serum is a cure for most cases of the disease, if it is given in an early stage. The only thing you can do to get cases treated in an early stage is to have doctors examine children when they have colds or what seem to you to be colds. The same measures that prevent colds will prevent spinal meningitis. Not only does the early administration of Flexner's serum cure the disease but it prevents the hideous deformities which the disease produces otherwise. If a case of spinal meningitis is allowed to run on, the inflammation extends from the membrane around the brain to the brain itself. Then all sorts of deformities follow depending on what part of the brain was affected. If the part that controls the eye is affected, the child may be blind. If the part that controls the ear, deaf. Enough of the brain may be injured to make an idiot out of the child. Therefore, it is well to have every child who has a cold examined by a doctor. That procedure as you have seen will



On the left-hand side you see the inflamed dura, the membrane which surrounds the brain. On the right-hand side the dura has been cut away. You can see how pus and germs from the dura get to the brain when the dura is inflamed.

result in getting a great many different children's diseases diagnosed and treated in an early stage.

This baby was so far gone that he died. This case shows what doctors can tell when they examine a person who is sick. In this case the trouble with the brain made changes in the way the nerves reacted. Only a doctor could tell what these changes were. The pupils of the eyes did not react to light. Usually when you hit the large cord in front of the knee, the lower leg will jerk. That is because the nerves react from the blow you strike the knee. This act is called the knee jerk. It was absent in this case. When things get the matter in the chest, the sounds made by the lungs and the heart are changed. A doctor can distinguish these changes by using a stethoscope. When things get the matter in the abdomen, the condition of the abdomen will be changed. It will be held more rigidly and there may be masses to feel in it. Only a doctor can tell whether the condition is normal or abnormal, and so it goes for all parts of the body. A doctor can tell the difference between normal and abnormal. Unless the difference is very marked, the average person cannot do so. You need not remember what these various changes are but you must appreciate that a doctor can often tell abnormal from normal when you cannot.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Spinal meningitis.
II. Symptoms.	1. Appearance of being sick. 2. Fever. 3. Vomiting. 4. Drowsiness.

II. Symptoms—*cont.*	5. When examined, signs that came from brain trouble.
	6. Meningococci in spinal fluid.
III. Cause.	Meningococci attacking brain.
IV. Treatment.	1. Lumbar puncture.
	2. Flexner's serum.
V. Preventive treatment.	1. Early diagnosis.
	2. Early administration of Flexner's serum.

CASE NO. 20

George D., aged twenty-seven years, a teamster, knew that there were several sick horses in the barn where he worked. One of his horses had a discharge from the nose and did not seem as ambitious as usual. In a week the horse was so sick that he could not work at all. The discharge from the nose was worse. Many small lumps had appeared under the skin of the front legs and at the place where the front legs joined the body. About this same time, the seventh of October, George D. began to feel a little bit out-of-sorts himself. He had a headache, and a pain in his right leg. On the second day he felt feverish and so much out-of-sorts that he stayed in bed. On the third day his landlady found that he was a little bit out of his head. He lay in bed and kept insisting that the fire department was going to take his horses. A doctor was called in. He noticed that the man had much discharge from his nose and had several small lumps in his armpits and over his arms.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 20

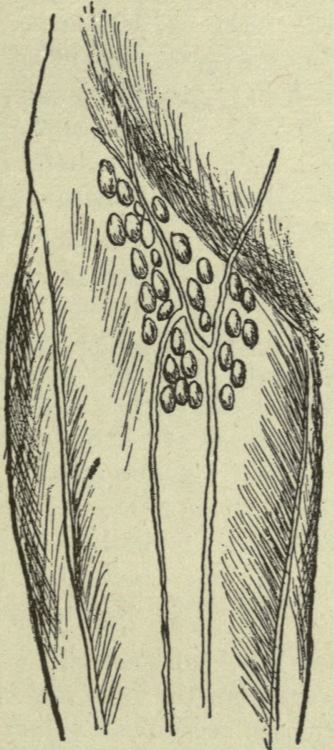
The symptoms of a discharge from the nose, general illness, and having little glands swell up under the skin is typical of glanders in horses. The disease can be transmitted to men. If you will notice, the man had almost exactly the same symptoms as the horses. He had a discharge from the nose; was sick with a fever; and had glands swell up under the skin of his armpits, arms, and groins. He was removed to the hospital and died in forty-eight hours. Autopsy showed that the germs which cause glanders were swarming in the glands that had swollen up.

The glanders bacillus

He had undoubtedly caught the germs of glanders from the horses. He either breathed them in around the stable or had gotten them on his fingers and then into his mouth. Horses get the disease from a common watering trough. If one horse drinks from the trough, he gets the germs into the water. Then all of the horses get them.

Once a man or a horse has the disease, very little can be done for him. The great hope lies in prevention.

The disease can be prevented in horses by not having common watering troughs. That is why most stables use pails nowadays, each horse having its own pail. After the disease breaks out, animals with it should be destroyed to keep the disease from spreading to other animals. The disease is very rare among people. The only people who get it are men who take care of horses. They can avoid it by being careful with sick horses. So many horses are destroyed by the disease that there is no doubt that public and common watering troughs should be abolished.



In a case of glanders the lymph glands all over the body enlarge in this way

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	1. Glanders.
II. Symptoms.	1. History of sick horses. 2. Out-of-sorts. 3. Headache. 4. Pain in leg. 5. Fever. 6. Delirium. 7. Discharge from nose. 8. Enlarged glands.
III. Cause.	1. Glanders bacilli attacking nose and glands. 2. Poisons from germs circulating all over body.
IV. Treatment.	1. Rest in bed.
V. Prevention.	1. Abolish common watering troughs. 2. Destroy animals with the disease.

SUMMARY NO. 2

The last ten cases have all been about diseases that are spread by discharges from the nose and throat. We have considered tuberculosis, septic sore throat, pneumonia, infantile paralysis, spinal meningitis, and glanders. The preceding group was also about diseases that were spread from the discharges of the nose and throat. The diseases of that group are spread more easily than those of this group.

Different measures must be taken to prevent each one of these diseases because the diseases are spread in different ways and must be handled in different ways.

From the first two cases, those of the man who got tuberculosis in a crowded factory and became worse because alcohol robbed him of his senses, we may learn several general lessons.

1. Almost every person has had tuberculosis but has thrown it off, because he was in good condition.
2. Proper housing, a chance to keep in good condition, and good ventilation of buildings will do a great deal to prevent the disease.
3. Proper disposal of sputum will also help to prevent the disease.
4. Most cases of tuberculosis can be prevented from causing death, if they are treated in an early stage.
5. Cases of tuberculosis will not be cured in an early stage unless you learn the early symptoms of tuberculosis and see that suspected cases are examined by a doctor.
6. The early symptoms of tuberculosis are loss of weight, color, endurance, and appetite. There may be fever and coughing up of blood. Adults have a cough.
7. Alcohol helps the germs of tuberculosis to kill.
8. In case of a hemorrhage from the lungs, keep the person quiet and send for a doctor.

The third and fourth cases were about a child who had tuberculosis. We learned from them that almost the only difference between tuberculosis in a child and an adult is that the child has no cough and usually gets over the disease before any one finds out that he has had it, especially if he gets a chance to go to the country where he can have fresh air and good food.

From the fifth and sixth cases, those of the milkman who started an epidemic of septic sore throat, we may learn several general lessons.

1. Septic sore throat is a disease transmitted by means of milk.
2. Septic sore throat may be prevented by pasteurizing the milk.
3. Pure milk is better than pasteurized milk.
4. Pure milk may be secured by having the dairies properly inspected, by having the milkers inspected, and by having the milk properly inspected after it gets to town.
5. Milk can be pasteurized at home.
6. Milk should be kept on ice in warm weather.
7. Store milk is apt to be impure.
8. Certified milk is apt to be pure.

From the seventh case, that of the baby, who had pneumonia and pus in the chest, we may learn several general lessons.

1. Pneumonia kills more people than any other one disease.
2. The germs of pneumonia are in people's throats and noses all of the time.
3. The only thing a person can do to prevent pneumonia is to keep in good condition.
4. Pneumonia is not as hard on children as on adults.
5. As a citizen you can see to it that every one has a good chance to keep in good condition; that is, you can help to abolish the liquor traffic, the smoke nuisance, the close housing of people, the poor ventilation of buildings, the overheating of buildings, and you can help to establish parks, playgrounds, gymnasiums, and baths.

From the eighth case, that of the little boy who got infantile paralysis, we may learn several general lessons.

1. Infantile paralysis produces a great many cripples.

2. Infantile paralysis is spread in about the same way measles is spread.

3. Infantile paralysis can be prevented by isolation.

4. Once the child has the disease, proper treatment will make the recovery more certain than improper treatment.

5. Proper treatment consists of a rest of six weeks in bed, and then massage treatments every day.

From the ninth case, that of the little boy who had spinal meningitis, we may learn several general lessons.

1. Spinal meningitis is an inflammation of the membrane around the brain and spinal cord.

2. The disease is spread in about the same way infantile paralysis is spread.

3. The disease can be prevented only by isolation in an early stage.

4. Flexner's serum will cure the disease, if given in an early stage.

5. The only way cases can be cured in an early stage is to have children, who seem to have colds, examined by a doctor.

6. If the disease is allowed to damage the brain, all sorts of deformities, such as idiocy, blindness, and deafness are produced.

From the tenth case, that of the man who got glanders from his horses, we may learn several general lessons.

1. Glanders is a disease of horses. It kills a great many thousand dollars' worth of horses every year.

2. It is spread from the noses of the horses at common watering troughs.

3. The disease can be prevented by abolishing public and common watering troughs.

4. Once the disease has broken out animals with it should be destroyed.

5. The only people who get it are horsemen.

6. They can avoid the disease by taking precautions when around sick horses; such precautions as keeping the hands clean, and wearing rubber gloves.

CASE NO. 21

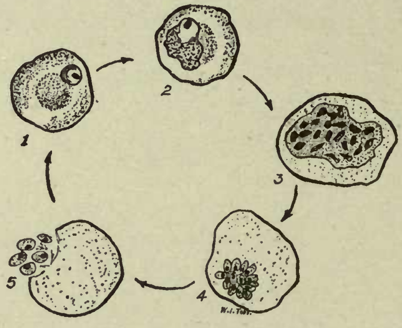
Theodore C., aged seven years, at noontime on the seventh of July had a feverish attack and shook all over. He did not go down to the creek and play that afternoon as usual. That night and the next night he slept rather poorly because he was bitten so many times by mosquitoes. On the eighth he was around playing as usual. About ten o'clock on the ninth his mother noticed that he came in and laid down on the sofa. In a little while he began to get red and hot. His teeth chattered. He shook all over. Then he became pale and burst into a cold sweat. He repeated this three times in the next ten minutes and then went to sleep.

What do you think is the matter with the boy?

DISCUSSION—CASE NO. 21

Chills and fever used to be the name for malaria but they also come at the onset of other diseases. In any such case, the thing to do is to get a doctor. In this case the doctor found the parasites of malaria in the blood as you may see in the illustration.

The parasites of malaria are tiny one-cell animals. They get into a person when he is bitten by mosquitoes who happen to be carrying the parasites of malaria in their mouths. You can tell the malarial mosquito from the ordinary mosquito by looking at its wings. The ordinary mosquito has straight ribs in his wings while the malarial mosquito has spots on his wings as you may see in the illustration. Not all mosquitoes carry malaria.

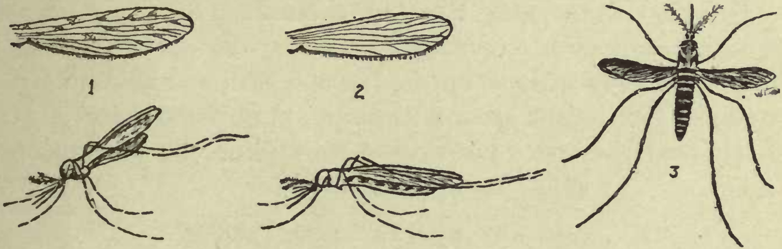


The parasites of malaria multiplying in the red blood cells

When the parasites get into the blood, they multiply rapidly. In a short time they become millions. Swarms of them, circulating in the blood, cause the chills, fever, and headache and the general feeling of sickness that a person has when he has malaria.

Quinine, properly given, will cure malaria. It took only six grains to cure this boy. If you live in a country where there is much malaria, you will know that a great many people who have had malaria do not stay cured after taking quinine. That is because there is a form of the parasite in the blood which can be reached only by taking one grain of quinine every hour for four hours preceding the hour at which the last chill came. This must be done every seventh day for seven days from the day of the last chill.

The reason for this treatment is because this form comes out into the blood where quinine will reach it only every seventh day. This treatment was invented by Bass of New Orleans. There is no doubt that it does cure a great many of these chronic cases of malaria. When you get to be voters, you should see to it that Bass and men like him are given rewards of money, have statues erected to them in public places, and get a permanent place in history. The progress of the world is largely made by these scientists who make important discoveries.



How can you tell the ordinary mosquito, the malarial mosquito, and the yellow-fever mosquito apart? The second mosquito is the ordinary mosquito, the first is the malarial mosquito, the third one the yellow-fever mosquito.

The disease was prevented almost entirely by killing off all the mosquitoes in Panama when the canal was being built. This was done by draining out the places where they breed. They must have the pools of stagnating water to breed in. Otherwise, the little forms, from which the mosquitoes develop, die. Draining out all of the stagnating pools of water prevents malaria. Another thing that is done is to flood bodies of water with barrels of Panama larvacide. The latter is a mixture of crude oil, caustic soda, carbolic acid, and resin. It kills young, developing mosquitoes. This work of mosquito prevention must be done very thoroughly, if the mosquitoes are to be exterminated. A tin can full of stagnating water may develop thousands of mosquitoes. Another remedy is to put small trout in the water with the hope that they will eat up the larvæ. Still another thing is to have bat roosts around swampy, stagnating water. It is claimed that bats keep down mosquitoes by feeding on them.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Malaria.
II. Symptoms.	Chills and fever every third day.
III. Cause.	1. Parasites of malaria invading blood at time of chill. 2. Parasites of malaria multiplying in cells between chills. 3. Parasites carried by mosquitoes.
IV. Treatment.	Quinine.

V. Preventive treatment.	Bass treatment.
VI. Prevention.	1. Drainage. 2. Larvacide. 3. Bats. 4. Fish. 5. Quinine.

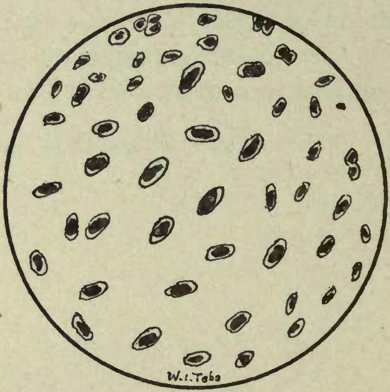
CASE NO. 22

Mr. J. C., aged twenty-two years, a wharf hand at New Orleans, felt very sick on the morning of July 4th. His head ached terribly, he became dizzy and pale, and was so weak that he could not hold up his head. Toward evening he became drowsy and stupid and tossed in high fever. On the fifth and sixth he continued the same way. On the seventh the doctor while making his visit discovered that there were swellings in the man's groins. His feet, which had been bare all summer, were considerably flea-bitten. On the night of the seventh he had a few convulsions and died.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 22

At autopsy the germs of bubonic plague were found in the swollen glands in the man's groin. A small-sized epidemic of bubonic plague occurred about this time in New Orleans. The men on the Board of Health there knew that the disease was spread by rats. Fleas carry the disease from rat to rat. When the rats die, the fleas start biting people and give them the disease. People also get the disease from the waste products of rats which get into food and on the fingers.



The plague bacillus

The health authorities isolated all suspicious cases and screened them off so that no fleas could get to them. Then they killed off all of the plague-infected rats in New Orleans. A small army of men was hired. Business men closed their stores and allowed their employees to take part in the big rat hunt. As rats were killed, they were examined to see if they had plague. Many did. As long as any plague rats were found, they kept up the hunt.

Another thing that was done to prevent the disease was to provide Haffkine's preventive treatment, a sort of vaccine which is used to prevent the disease. Every one who had been exposed was allowed to have the treatment. The epidemic was checked. Only twelve cases developed.

In India and China where these things are not done, an epidemic often carries off a fourth or fifth of the population. The disease is the one that has been called the black death. As you see, modern methods of sanitation stopped it very promptly at New Orleans. Our Health Boards wage constant war on this disease. They attempt to prevent rats from leaving ships and coming into our country. Rats carry several other diseases about which we shall learn later.

People should not allow rats and mice to live with them. It seems impossible to exterminate rats, but the number could be kept down and they should be kept out of houses. A cat will usually do that. Rat poisons around a house are dangerous. Children sometimes eat them. Dead rats also give off a very bad odor.

A form of the disease called the pneumonic form because it infects the lungs sometimes occurs. This is very deadly because it is carried in the air.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Plague.
II. Symptoms.	Those of a severe infection. a. Headache. b. Dizziness. c. Pallor. d. Drowsiness. e. Fever.

II. Symptoms—*cont.*	f. Swollen glands in groins. g. Germs of bubonic plague in glands.
III. Cause.	1. Germs, or poisons produced by germs, circulating all over body. 2. Germs spread by fleas and rats.
IV. Treatment.	Rest in bed.
V. Prevention.	1. Kill rats 2. Keep out rats from ships. 3. Haffkine's treatment.

CASE NO. 23

Harold W., aged twenty-four years, came to the hospital because he had been sick for three days with a headache, fever, loss of appetite, and a general feeling of depression. The trouble had started suddenly, three days before, with an attack of chills and vomiting. When he was examined, it was found that a red rash had come out on his body. The rash looked a little like the rash of scarlet fever but was more spotted. For five weeks he lay in bed with high fever, and part of the time with delirium. The doctor said it was a case of typhoid fever but the blood reaction for typhoid fever was never positive.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 23

At the time this man was in the hospital, all of the doctors said that he had typhoid fever. At the time, they did not know very much about typhus fever. It was a very rare condition. When the war had been going on a little while, we began to hear of epidemics of typhus fever in Servia. Then all the doctors got down their books and looked up the symptoms of typhus fever. At once they knew that this must have been a case of typhus fever. There was no blood reaction for typhoid. The onset was sudden with a chill and vomiting. The onset of typhoid is very gradual. There is no rash in typhoid. The sudden onset and rash is characteristic of typhus.

Another thing that makes one feel very sure that this was a case of typhus is the fact that the man was so dirty. When he came in he was very lousy. We know now that typhus fever is spread by lice. The reason so many Servians got the disease in the war was because they had to be so dirty and were so lousy in the trenches. To keep down the disease, the Russians had bath trains and gave their men baths. Wherever they were able to keep the men clean, the disease did not appear. In a great many places, where the men were dirty and lousy, the disease appeared very promptly. This man got well at the end of about eight weeks.

The way to prevent the disease is to isolate cases as soon as they occur, and clean them. The most important step in preventing the disease is to keep clean. That means taking a bath every day and wearing clean clothes. Whenever lice appear on a person's clothing, they should be gotten rid of very promptly. Boiling all of the clothing, underclothing, and towels, will kill the lice. Changing every day and again boiling the clothes will kill the few lice that get from body to clothes after the first bath. The body should be bathed each day. Kerosene should be applied to places where lice might be. And any marks where the lice have been should be smeared with sulphur ointment. The lice may be removed from the hair by cutting it off, if it is a boy or man, and administering a crude oil shampoo. If it is a girl, a series of crude oil shampoos will remove the lice from the hair.

The war shows the value of cleanliness. Cases of diseases that had almost disappeared—such as hospital gangrene, gaseous gangrene, and cholera—reappeared by the thousand, amid the dirt and squalor of the trenches. In clean places these diseases are not found. In very dirty cities and countries where the people are filthy and dirty, they are always found in greater or less numbers.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Typhus fever.
II. Symptoms.	Those of a severe infection plus a red rash.
III. Cause.	1. Germs of typhus fever attacking man. 2. Germs carried by lice.
IV. Treatment.	Rest in bed.
V. Prevention.	1. Cleanliness. 2. Isolation.

SUMMARY NO. 3

The last three cases have been about diseases that people get from animals. The first case was about malaria, which people get from mosquitoes. The second case, about plague, which people get from fleas, and the third case about typhus fever, which people get from lice. We also noted that rats were a factor in spreading plague. These are not all of the diseases that animals convey to people.

From the first case, that of the little boy who had malaria, we may learn several general lessons.

1. Malaria is caused by parasites which get into people when a certain kind of mosquito bites them.
2. The mosquito which carries the parasite of malaria has spots on its wings.
3. Once the parasites of malaria get inside of a person, they multiply in the blood and cause chills and fever and headache and destroy the blood so that a person looks pale.
4. Quinine cures malaria.
5. After an attack of chills and fever, it is necessary to take quinine once a week at just the right time to kill off the form of the parasite that remains in the blood.
6. Malaria can be prevented by killing off mosquitoes.
7. This may be done by draining, the use of Panama larvacide, putting trout in stagnating water, and erecting bat roosts.
8. Bass of New Orleans deserves great credit for his work on malaria.

From the second case, that of the man who had plague at New Orleans, we may learn several general lessons.

1. People get plague from the bites of fleas and from the discharges of rats which sometimes contaminate food.

2. Fleas spread the disease from rat to rat and to people when the rats die out.

3. The disease can be prevented by killing off all rats who have plague and by keeping rats with plague out of this country.

4. Rats keep coming to this country from China and India and other countries where they have plague.

5. If an epidemic does break out, all suspicious cases should be isolated and screened off.

6. In case of an epidemic, all of the people who have been exposed should be given the vaccine for plague.

7. People should keep rats and mice from living with them by providing rat-proof cellars and cats.

8. A form of plague called the pneumonic form, because it infects the lungs, sometimes occurs. This is extremely contagious and deadly because it is carried in the air.

From the third case, that of the man who had typhus fever which was not recognized by any of the doctors, we may learn several general lessons.

1. Typhus fever is spread by lice.

2. Countries which are lousy and dirty have such diseases as typhus fever all of the time.

3. During the war, when people had to be lousy and dirty in the trenches, epidemics of typhus fever occurred.

4. Typhus fever may be prevented by keeping one's self and one's house and one's premises and one's town and one's country clean.

CASE NO. 24

Albert L., who was employed as a milker in a dairy, noticed that several of the cows seemed sick. Their mouths dripped saliva. Several of them had little eruptions between their toes and above their hoofs. Some of the patches were beginning to be running sores. More cows became sick. About a week after he noticed the first sick cow Albert L. awakened and felt some sore spots in his mouth. For a few days he had a rather sore mouth. On the third day a few little pimples, full of serum, broke out on his hands. He felt out-of-sorts for five or six days. Then the pimples disappeared and he recovered.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 24

The foot and mouth trouble with the cows indicates foot and mouth disease. You will notice the man had almost the same trouble that the cows had. He had trouble with his mouth and with his hands. The same germs were attacking the man that were attacking the cows. This disease is called foot and mouth disease.

The disease is spread by germs from the saliva and from the sores. You can easily see how every cow in the herd would be exposed and how all the milkers attending the cows would be exposed. The disease does not kill people. It is usually very mild. It kills some cows, but the great damage it does is to affect them so that they are not any good for milk or beef for at least one year. That results in the loss of millions of dollars, if the disease is present in many parts of the country. There is no treatment for the disease that is of any account. Once it gets started, it must run its course.

People can keep from getting the disease from animals by keeping their hands clean when they are around them and by pasteurizing any questionable milk. Cattle with the disease should be destroyed very promptly. Herds with the disease should be quarantined so that the animals cannot carry it to another herd. During and after quarantine dairy barns and racks should be disinfected by a careful scrubbing with soap, chloride of lime, and water.

The marine hospital service wages a constant warfare against this disease. They attempt to inspect all of the cattle that come into the United States and in that way to keep the disease out. When you get to be a citizen you should see to it that there is a national Board of Health and that such activities as this are not handicapped for lack of funds. Although it had been handicapped for lack of funds for a great many years, our marine hospital service kept the foot and mouth disease out of the United States while it was raging in Europe. In addition to keeping out this disease, it has done a great deal to keep out cholera, yellow fever, plague, typhus fever, smallpox, and leprosy. Seldom do you hear of these diseases in this country. Other countries are constantly sending such cases to our ports but they do not get in.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Foot and mouth disease
II. Symptoms.	1. History of cows with foot and mouth disease. 2. Sores in mouth. 3. Sores on hands. 4. Out-of-sorts.
III. Cause.	1. Germs of disease causing sores. 2. Germs spread in discharge from cows' mouth and feet.
IV. Treatment.	Rest.
V. Prevention.	1. Destroy animals with the disease. 2. Quarantine herds with it. 3. Disinfect carefully places where it has been. 4. Cattle inspection at ports.

CASE NO. 25

Mrs. R. D., aged twenty-five years, was seized suddenly with a chill on February 2d. She felt very feverish afterward; had a splitting headache; and had severe pains in the back. Just before the chill she felt sick and vomited.

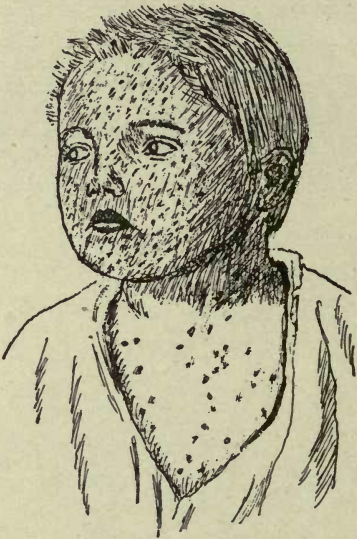
On February 3d, there was a reddish eruption on her chest that looked like measles. On the fourth, it had faded and small round spots began to come on her chest. They were a brownish color and about the size of a French pea.

What do you think is the matter with the woman?

DISCUSSION—CASE NO. 25

Here is another disease which causes eruptions on the skin. Smallpox is such a disease. An old doctor who had seen a good many cases of smallpox recognized the condition at once.

Whether a germ causes smallpox we do not know. We know that the disease is spread from the sores in the skin and from the discharges of the nose and throat. Smallpox is looked upon as a serious disease. It is bad enough but never did result in as many deaths as either measles or whooping cough.

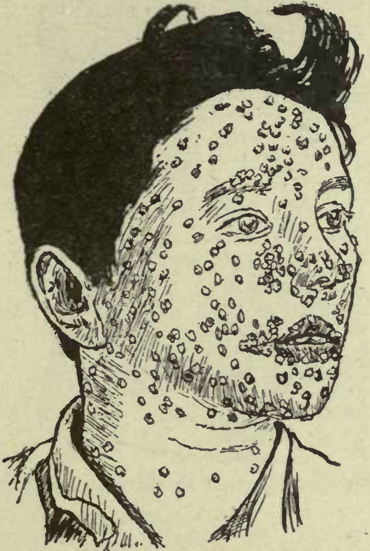


A case of smallpox resembling measles,
third day of eruption

After Welsh & Schamberg. Courtesy, Lea & Febiger

Once a person has acquired the disease, a great deal can be done for him by careful nursing. A good nurse can keep the sores clean and keep the sick person comfortable. Most of the deaths which occur in smallpox occur because the sores are allowed to become infected with pus germs.

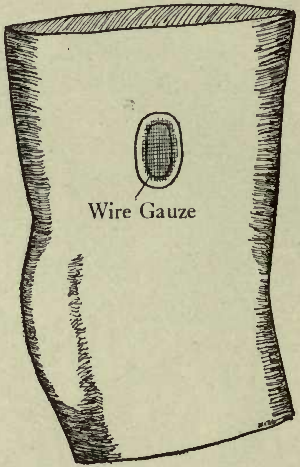
As you probably know, vaccination prevents smallpox. Before Jenner discovered that smallpox could be prevented by vaccination, there was a great deal of it in this country. It was more common than measles. Since its compulsory use, you seldom hear of a case. Before the United States occupied the Philippine Islands, there was no vaccination and there was a great deal of smallpox. After the United States occupied the Philippine Islands, they compelled all of the natives to be vaccinated. Cases of smallpox are now



Smallpox in an unvaccinated boy,
eighth day of eruption
After Schamberg. Courtesy, Lea & Febiger

very rare in the Philippine Islands. It seems a shame that there cannot be a vaccine which will prevent every disease that is caused by germs. There are preventive vaccines for typhoid fever, tetanus and scarlet fever, cholera and plague.

You will sometimes hear people say that vaccination is harmful, that some people have been killed by it. No person has ever been killed by the vaccine itself. It has happened that the wound made when putting the vaccine in has become infected with other germs. The germs of tetanus have been in the skin when the person was being vaccinated against smallpox. Later the person developed lockjaw and died. Such things can be avoided by cleaning the skin before the vaccination is made, by taking precautions to have the vaccine pure, by taking precautions to keep dirt out of the wound after vaccination, and at the same time



This vaccination shield keeps dirt out
and lets air in

leaving the wound open to the air. If the wound is left open to the air, tetanus germs will not grow in it. A vaccination shield such as the one illustrated does this. The danger of tetanus from the modern vaccine is practically nothing. It has never been proved that the vaccine itself contained the germs of tetanus. In the very small number of cases of tetanus that have occurred the germs in all probability were in the skin before the vaccine was administered.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Smallpox.
II. Symptoms.	A. In early stage. 1. Those of an infection by germs. 2. There may be a rash. B. Later. 1. Spots come out.
III. Cause.	1. Probably a germ. 2. Spread from nose, throat, and sores on skin.
IV. Treatment.	1. Rest in bed. 2. Cleanliness.
V. Prevention.	Vaccination.

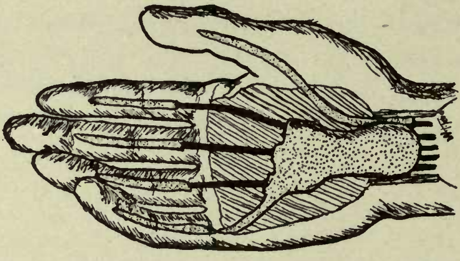
CASE NO. 26

Martin A., aged twenty-two years, was employed in a hospital to sort clothes that came from patients and from the operating room. September 2d, his right little finger was scratched on a pin. That night it pained a little. On the third, it was slightly reddened and still pained enough to bother him. On the fourth, the pain was worse and kept him awake that night. He could not move the finger. The finger was red, hot, and more swollen. On the fifth, the pain had extended to the thumb. The little finger was swollen to about twice normal size. It was hot and of a red, angry color. A doctor was consulted. He advised that the little finger be incised. The man refused to "have any cutting done," as he expressed it.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 26

You would expect that the clothes from a hospital would be teeming with all sorts of germs. They were and the man had undoubtedly gotten some of them into the scratch on his little finger. The germs had attacked the little finger and had caused it to swell up and become red and painful. You have learned in a previous case that the little finger is connected with the thumb by its tendon sheath, and the germs are apt to extend from the little finger to the thumb.



The tendon sheathes of the thumb and little finger communicate in the palm

The man was very foolish not to have an incision made in the little finger so that the germs could drain out. The hand should have been put up in a warm, wet, antiseptic dressing. That might have stopped the infection. The man insisted on letting the thing go on five days with almost no treatment. At the end of that time his entire arm was infected and he had to have an operation at which he was given ether and the entire arm and hand had about a dozen slashes made in them. Eight drains were put in. For a time the man's life was despaired of but he did pull through.

At the end of two months the arm and hand were healed up with a great many scars on them.

The man had been warned that he was doing dangerous work; had been told that he must wear rubber gloves; that he must keep his hands clean; and that, if he did get any small wounds in his hands, he should have them treated immediately. He did none of these things. You see the consequences.

A great many people in hospitals, laundries, and homes handle clothes that come from other people. They should remember that these articles are dangerous and they should wear rubber gloves while handling them. They should be careful to keep the rubber gloves clean and to keep their hands clean and, if they do get any small wounds, they should treat them immediately.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Infection of hand.
II. Symptoms.	Swelling, heat, redness, pain.
III. Cause.	1. Germs had entered scratch. 2. Germs attacking hand.
IV. Treatment.	Incision and drainage.
V. Prevention.	1. Proper care of wounds. 2. Care in handling dirty clothes. 3. Rubber gloves.

CASE NO. 27

Mrs. E. R., aged thirty years, was careful of her hands in doing housework. She always wore rubber gloves while washing dishes or clothes. On July 7th she scratched her little finger on a pin. She put peroxide on it and let it go. On July 8th, the finger throbbed, was a bit reddened and hot. On the ninth, it was swollen markedly.

What do you think is the matter with the woman?

DISCUSSION—CASE NO. 27

This is another case of sepsis. This woman, however, did not neglect the infection. She went immediately to a doctor who put a hot, wet, antiseptic dressing on the finger and avoided operation. She was well in four days.

The doctor asked her why she did not wear rubber gloves when washing clothes or dishes. She replied that she did. He discovered the trouble was that she did not always wash the gloves carefully after she was through using them. If a person is going to use rubber gloves that must be done. Otherwise, the gloves will grind germs into the skin as the hands are used.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Infection of finger.
II. Symptoms.	Heat, redness, swelling, pain.
III. Cause.	1. Germs from scratch attacking finger. 2. Germs came from dirty rubber gloves.
IV. Treatment.	Antiseptic bath.
V. Preventive treatment.	Early treatment of infections.
VI. Prevention.	Cleanliness.

CASE NO. 28

Harold L., aged sixteen years, while crossing the street was compelled to dodge a fast-flying motorcycle. Neither he nor the driver were knocked down but the machine ran over the toes of his left foot and took most of the skin off the top of the fourth and little toes. He cleaned the toes up with peroxide and bound them up with some clean white rags. After that he went on playing baseball, going in bathing, and dancing just as usual. Most of the time there was no bandage over the toes.

What danger was the young man in?

DISCUSSION—CASE NO. 28

The young man was in danger of having his toes infected with germs. He was exposing the wound to germs by not keeping them covered up and was constantly weakening the tissues of the toes by bruising them as he walked. The bruised and weakened tissues were not able to fight off the germs as well as healthy tissues.

The result was that the young man did get an infection of the toes. It ended by his getting an abscess back of the knee which required an operation and laid him up for a month.

He should have cleaned the wounds up carefully immediately or painted them with tincture of iodine and put on a sterile dressing. Then he should have kept off the foot until the toes had at least partly healed up.

A great many motorcycle and automobile accidents occur because people cross the street between crossings. Most of these can be prevented by a law forbidding people to cross the street between crossings. In a crowded city district elevated street crossings or subway street crossings, at corners, would prevent a great many automobile accidents.

Many accidents occur in cities because people attempt to cross before the officer signals. Wait for him. Do not try to cut through automobiles.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Danger of infection.
II. Symptoms.	1. Bruising wounded tissues. 2. Not keeping germs out.
III. Cause.	1. Tissues were weakened.

III. Cause—*Cont.*	2. Germs attacked tissues—They caused infection of toes and an abscess back of knee.
IV. Treatment.	Operation.
V. Preventive treatment.	Care of small wounds. 1. Peroxide or tincture of iodine. 2. Sterile dressing and bandage. 3. Rest of part.
VI. Prevention.	Prevent motor accidents. 1. By not crossing streets between crossings. 2. By having depressed or elevated street intersections.

CASE NO. 29

John D., aged nineteen years, an employee in a mince-pie factory, had his hand cut in four places by a mince-meat slicer. They were not very large cuts and did not bleed very much. So, he merely bound them up with his handkerchief and some tobacco which had been chewed up. The hand was so cumbersome that he could not work. So, he retired to a baseball game. On the third day the hand began to throb and pain. A friend told him that it was just the cuts healing. The next day the forearm throbbed and ached. At night the whole arm pained and the forearm was red. hot, and swollen.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 29

Here is still another case of sepsis, the same old story: a small wound neglected—germs got into it—in a few days the whole hand and arm were inflamed—operation—slashes by the doctor—six weeks getting well. It pays to take care of a small wound properly at the start. Putting a chew of tobacco on the wound is almost as bad as spitting on it. Of course, a great many germs from the mouth were put into the wound.

A great many accidents occur in factories, shops, and other industrial institutions which ought to be prevented. Every factory has to work out this problem of prevention for itself. Workmen should not be exposed to dangerous machinery. Most states require that steam boilers be inspected to see whether they are safe or not. There is no reason why all machinery should not be inspected. Boiler inspections not only prevent boiler explosions and save lives but actually pay the manufacturers. They keep the machinery in better shape. It works better and lasts longer as a result of the inspection. If it did not pay, you must remember that the workers are human beings and that human beings have a right to their lives. If precautions can be taken to save their lives, these precautions should be taken.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Infection of arm.
II. Symptoms.	Heat, redness, swelling, and pain.

III. Cause.	Germs, probably from mouth.
IV. Treatment.	Incisions and drains.
V. Preventive treatment.	Proper care of wounds.
VI. Prevention.	1. Safe machinery. 2. Factory inspection.

CASE NO. 30

Andrew C., aged sixteen, ran a thorn of a palm tree through his sock and shoe into his foot for about an inch. He pulled the thorn out and thought nothing of it. Next day the foot began to ache and throb.

What should you look out for and try to prevent in this case?

DISCUSSION—CASE NO. 30

Here is still another case of sepsis. In this case there are two things to watch out for. One of them is tetanus. As you have learned before, tetanus may develop in any deep wound which is not exposed to the air. Consequently, the serum should be given. The second danger is the danger of a foreign body. A piece of sock or something of the kind may have been stuck into the wound. The doctor who attended the case thought of both of these things. He gave the serum and he opened up the wound. In the bottom of the wound he found a piece of sock. He put a large, antiseptic dressing on the wound. It was all healed up in a week. If he had failed to find the piece of sock, the wound would probably have become infected and another bad case of sepsis would have occurred. In case of a punctured wound like this, always remember the danger of a foreign body.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Infection of foot.
II. Symptoms.	Pain.
III. Cause.	1. Germs attacking foot.
IV. Treatment.	1. Opening wound. 2. Rest. 3. Antiseptic dressing.
V. Preventive treatment.	Tetanus serum.

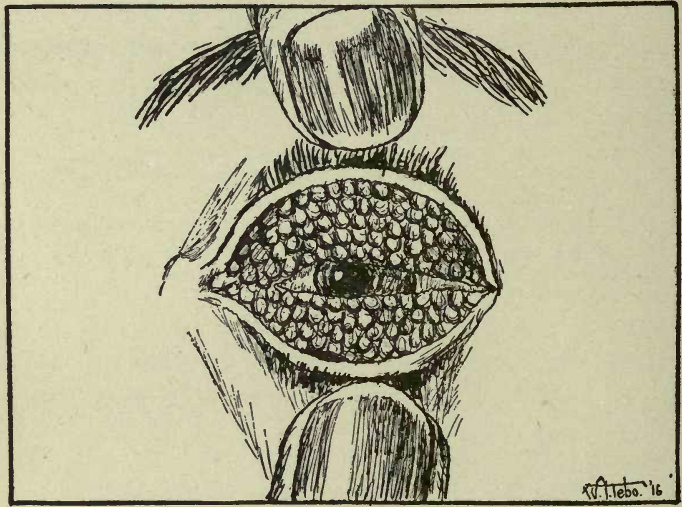
CASE NO. 31

Clara L., aged eight years, began to have aching eyelids about February 1st. During the next seven days her eyes were painful, discharged rather freely, and the lids were stuck together frequently. During this time, it was almost impossible for her to see out of the eyes. By February 8th, she was better but for the next month had sore eyes. Then she became unable to see out of her right eye.

What do you think is the matter with the little girl?

DISCUSSION—CASE NO. 31

The little girl evidently has something the matter with her eyelids and her eyes. A doctor who knows how the disease trachoma acts would immediately suspect this disease which first affects the eyelids and later affects the eyeballs. A doctor did find trachoma bodies on the lid and he found that the things which cause trachoma had also attacked the cornea of the right eye and made it opaque.



Trachoma bodies

No one knows what the things that cause trachoma are, whether they are germs or not. They act like germs but no one has ever seen them. The disease is spread from eye to eye by means of fingers. Once the disease has started, it is very hard to cure. The lids have to be scraped and chemicals applied to them. Usually a case lasts for years, and often as in this case results in an injury to the eyesight. Of course, this little girl ought to have been taken to a doctor when the trouble began. It would have been easier to cure it then than at a later time. If you ever have any eye trouble that lasts longer than two or three days, do not delay about seeing a doctor. If pus ever runs from your eyes see a doctor at once.

Health authorities take several measures to prevent the disease. In some cities a person with the disease has to wear spectacles of an odd green shade so that other people may avoid him. It is very hard to isolate cases of the disease which last so long. Every immigrant who comes into this country has his eyes examined. If he has trachoma, he has to go back. The disease is spread by common drinking cups, towels, and washbowls. Common drinking cups and towels have been pretty well abolished. If you have to use a public washbowl, always wash it out carefully before using it.

Trachoma is a very common disease in European countries where it causes a great deal of blindness. We are just beginning to get the disease in our large cities where immigrants from European countries come. Now is a good time to stamp the disease out. The only way that can be done is by isolating all cases of trachoma until they are cured.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Trachoma.
II. Symptoms.	Early stage. 1. Pain in eyes. 2. Discharge from eyes. 3. Difficulty in seeing. Later stage.

II. Symptoms—*cont.*	1. Inability to see. 2. Trachoma bodies.
III. Cause.	1. Germs probably attacking eyes. 2. Germs make cornea opaque.
IV. Treatment.	1. See a doctor.
V. Prevention.	1. Isolate cases. 2. Keep cases out of the country. 3. Green glasses. 4. Abolish common towels and drinking cups.

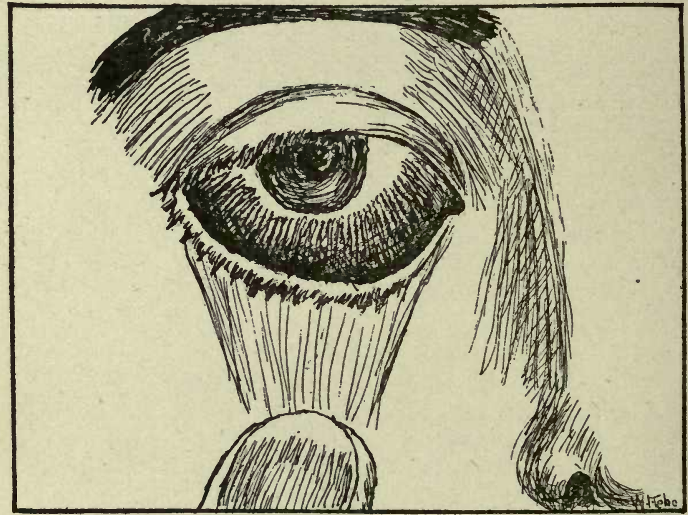
CASE NO. 32

Baby K., aged five days, began to have running eyes on September 7th. On the morning of the eighth, they were discharging pus freely.

What do you think is the matter with the baby?

DISCUSSION—CASE NO. 32

It often happens that babies get inflammations of the eyes. Such an inflammation is called ophthalmia, which in Greek means the inflammation of an eye. These inflammations are caused by different sorts of germs. Sometimes they are so bad that the eyesight is completely destroyed and the baby goes blind.



An inflammation of the eye, ophthalmia

This baby had a very bad infection. By the evening of the eighth, the eyes were swollen shut so that the lids had to be pried apart to see the eyeballs. Both corneas were opaque. The baby was removed to the eye and ear hospital but in spite of all that could be done both eyes became blind.

This should have been prevented. Every baby should have a few drops of a weak solution of silver nitrate put into his eyes when he is one day old. Many cities require by law that this be done and they require that every case of eye infection in a baby be reported to the Board of Health. These two measures prevent a great many cases of the disease. Only a doctor should use the nitrate of silver. Otherwise harm may be done.

Usually prompt treatment will save one or both eyes. If one eye only is infected, the other eye can be packed off with aristol powder and a pad of chamois skin so that no germs get in from the infected eye. The treatment for the condition often clears it up before the cornea is infected so that a perfect recovery results.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Inflammation of eyes.
II. Symptoms.	Discharge of pus.
III. Cause.	Germs attacking eyes.
IV. Treatment.	See doctor.
V. Preventive treatment.	Early diagnosis and treatment.
VI. Prevention.	Drops in eyes of baby.

SUMMARY NO. 4

The last eight cases have all been about diseases that were spread from the surface of the body. We have considered foot and mouth disease, sepsis, trachoma, and ophthalmia. We have learned that the germs of these diseases occur in the sores which appear on the surface or the discharges which appear on the surface. These germs are spread by means of fingers. The germs get from the fingers to various objects. Then these objects are handled by the fingers of the second person and the germs get from the fingers of the second person to that person's body. Different measures must be adopted to prevent different diseases.

The first case was about the young man who had foot and mouth disease. Foot and mouth disease very seldom attacks a person. When it does it is very mild. It causes a great deal of damage to cattle, killing off many and affecting many more so that they are of no account for a year or two. When foot and mouth disease appears in cattle, herds with it should be quarantined and cattle with it should be destroyed. For many years our marine hospital service has kept the disease out of the country, although it was raging in Europe. When you get to be a citizen, see to it that the marine hospital service has a good chance to do its work. It is a very good thing. It would be more effective, if there were a National Board of Health.

The second, third, fourth, fifth, and sixth cases were all cases of sepsis. The first case was about the man who was careless with dirty clothes in a hospital. His carelessness caused a very bad infection which almost resulted in death, and did result in crippling one arm and hand considerably. Many cases of sepsis can be avoided by wearing rubber gloves, keeping the hands clean, and treating any small cut or wound as soon as it is acquired. The proper treatment for a small cut or wound is to wash it out with peroxide or paint it with tincture of iodine and then put on a sterile dressing. Any person who is handling clothing from other persons should wear rubber gloves.

The second case was about the woman who did wear rubber gloves but did not keep them clean. She was wise enough to go to a doctor when the infection started and an antiseptic dressing would cure it. Keeping the rubber gloves washed prevented further infection.

The third case was about a young man who kept on bruising his toes after he had been wounded in a motorcycle accident. The bruised tissues were weakened and an infection resulted. After a wound, it is necessary to keep the tissues from being weakened by use. Many motorcycle and automobile accidents can be prevented by a law forbidding people to cross the street between crossings or before signal. Depressed or elevated street intersections will also prevent accidents.

The next case of sepsis was about the young man who worked in the mince-pie factory. He had his hand cut and treated it by putting on a chew of tobacco. The result was the usual infection, operation, and stay in the hospital for several weeks. From this case you may see how important it is to treat wounds properly in the first place. A great many factory accidents can be prevented by making factory machinery safe. Factory machinery will be safe when the state makes a careful inspection of all machinery just as some states now make of steam boilers. Such inspections not only save lives but save money.

The last case of sepsis was about the boy who ran a thorn into his foot. In case of a punctured wound of that kind, you should always think of the danger of a foreign body and the danger of tetanus. The serum which prevents tetanus should be given and the wounds should be examined for a foreign body. A piece of sock was removed in this case. Cases have occurred in which an infection has gone on for weeks and a piece of sock was finally found at autopsy.

The seventh case was about the little girl who had trachoma. Trachoma causes a great deal of blindness. It is spread from the eyes by means of fingers and intermediate objects. It can be prevented by having people with the disease wear distinctive glasses and by keeping people with the disease out of this country. In this country we have very few cases in comparison to the number they have in European countries. Cases of trachoma should be isolated. It is very hard to do this because the disease lasts so long.

The last case was about the baby who had ophthalmia. Babies get all sorts of inflammations of the eyes from germs. Some of these inflammations can be prevented by putting a few drops of weak silver nitrate solution into the eyes of every baby when it is born. Any case of eye trouble should be looked upon with suspicion. If it discharges pus, a doctor should see it at once. It often happens that the early treatment of these cases will prevent blindness.

CASE NO. 33

James M., aged sixty-one years, the superintendent of a large hospital, noticed that most of the accidents which occurred to working men who came to the hospital, happened on Monday.

Why do you think most of the accidents happened on Monday?

DISCUSSION—CASE NO. 33

Most of the accidents happened on Monday because the men had been drinking liquor on Saturday and Sunday. For a great many workmen, Sunday, instead of being a day on which to get a rest and allow their bodies to re-create themselves, is a day on which they tear their bodies down. Then they cause accidents, not only to themselves but to others. A good many firms pay their men Monday night instead of Saturday night for this reason.

The reason these accidents occur is because alcohol upsets the brain and the nervous system of the workman enough so that he is not as alert and keen as he usually is. Then accidents occur.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Alcohol.
II. Symptoms.	Accidents on Monday.
III. Cause.	Drinking liquor on Saturday and Sunday upset brains and nervous systems.
IV. Prevention.	Total abstinence.

CASE NO. 34

In 1906, Dr. Warren, the State Food Commissioner for the State of Pennsylvania, issued a statement in which he said: "A certain adulterated substance is about to flood the market. It will cause atrophy of nerves, convulsions, impaired vision, blindness, and even death. Intestinal derangement, dyspepsia, and kidney disease will also be caused by this substance and the adulterants in it."

What do you think the substance was?

DISCUSSION—CASE NO. 34

The substance was adulterated liquor. All sorts of things were put into it. Wood alcohol, fusel oil, red pepper, strychnine, and other adulterants were added. As you see, it caused more diseases than the average patent medicine is claimed to cure. Unlike the claims of the patent medicine it did cause them.

The liquor itself is bad enough, if it is pure. There is no doubt that a great deal of the liquor which is sold is not pure. Beer, wine, brandy, and whiskey are all apt to be adulterated. Then the person gets both the effect of the alcohol and the effect of the adulterant. All of the things mentioned are produced.

The national pure food law requires that the label state how much alcohol any patent medicine contains. In spite of the pure food law, a great many alcoholic liquors are adulterated. The only safe policy to pursue in regard to liquor is to let it alone.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Adulterated liquor.
II. Symptoms.	All sorts of diseases.
III. Cause.	Alcohol and adulterants put into liquor.
IV. Prevention.	Total abstinence.

CASE NO. 35

Life Insurance Companies have to know about the lives of the thousands of people they insure. They have studied thousands of cases carefully and have found that one class of people live shorter lives than other people. Life Insurance Companies use this knowledge for the purpose of making money. No theory or sentiment enters into the question.

What do you think the short-lived class of people are?

DISCUSSION—CASE NO. 35

The people who are short lived are the alcohol users. From the evidence the Life Insurance Companies have collected there is no doubt about this fact. If you use alcohol, it will shorten your life.

Not only will it shorten your life but it will make your life a very different thing than it would have been without alcohol. The use of alcohol affects the brain enough to change a person's entire mental attitude toward life. Whether you enjoy life or not, or whether you do anything that makes it worth living, depends upon the attitude of your mind. A person whose brain is under the influence of alcohol sees things falsely and fills his mind with all sorts of false ideas instead of filling it with truths. When he comes to act upon his false ideas he gets into trouble. When people act upon ideas that are truths and realities they do not get into trouble.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Users of Alcohol.
II. Symptoms.	Shortness of life.
III. Cause.	Different weakening effects of alcohol.
IV. Prevention.	Total abstinence.

CASE NO. 36

In a consumptive hospital in Germany, only 6 per cent. of the inmates had not used a certain substance before getting the disease.

What was the substance?

DISCUSSION—CASE NO. 36

The substance was alcohol. There is no doubt that the use of alcohol predisposes to tuberculosis. Not only does it make a person more apt to catch the disease but after the person has had it, it makes him less apt to get well.

People suffering with tuberculosis often ask doctors what the outlook for them is. No doctor will answer without asking whether the person is a drinker or not. If he is a drinker, the doctor will usually say he will not get well. He knows that every time the person becomes intoxicated he will be a good deal worse, or, if the person uses liquor every day, the doctor knows that it will lessen his resistance to the germs of tuberculosis enough so that he cannot overcome them.

Alcohol lessens the resistance of the white blood cells, which as you know kill disease germs. The white blood cells of an alcohol user will not kill as many disease germs as the white blood cells would, if he were a non-alcohol user.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Alcohol.
II. Symptoms.	Tuberculosis.
III. Cause.	Alcohol weakens the white blood cells of people. Then the germs of tuberculosis attack them.
IV. Prevention.	Total abstinence.

CASE NO. 37

In a certain ten families there were fifty-seven children. Of these children ten were deformed, six were idiots, four epileptics, and twenty-five died. Only ten were normal and healthy. In ten other families there was sixty-one children. Two were deformed. Five died. Fifty-four were normal and healthy.

Why do you think there was so much difference between the two groups?

DISCUSSION—CASE NO. 37

In the first group both parents were drinkers. In the second group neither were. Not only does alcohol affect the person who uses it but it also affects the children. Children of alcoholic parents are not only inferior in body but they are inferior in mind. Numerous investigations of people have proved that fact. It has been shown as well in experiments on animals. Dr. Hodge, who experimented upon dogs with alcohol, became famous because of the great importance of his discoveries. Two dogs, who had had alcohol regularly, in four years had twenty-three puppies. Many of them were deformed and many of them died. Only four grew up. During the same time the two dogs that had never had any alcohol had forty-five puppies. Only four were deformed. Forty-one lived.

You can see what a bad thing this is for a nation. If a large number of the people drink, almost all of the children will be children of parents who have used alcohol. That will mean that the nation will consist of people who have been weakened by alcohol. There is no doubt that any nation can strengthen itself by prohibiting the use of alcohol. A world without liquor would be a much better world.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Alcohol.
II. Symptoms.	Difference between the two groups.
III. Cause.	Bad effects of alcohol transmitted in families.
IV. Prevention.	Total abstinence.

CASE NO. 38

In England, Ireland, and Wales, it is estimated that 20 per cent. of the insanity is due to the use of a certain substance.

What do you think this substance is?

DISCUSSION—CASE NO. 38

The substance is alcohol. The word "insanity" as used in this case is not properly used. It should read 20 per cent. of the inmates of the insane asylums are there because of alcohol. By no means all of the people who have minds so deranged that they can be said to be insane are in an insane asylum. Most of the people who are insane because of alcohol are only partly insane. The people who are only partly insane are not in insane asylums.

There is no doubt that alcohol does have a very bad effect on communities and upon the world as a whole. It produces a great deal of inefficiency on the part of workmen; many accidents; much crime; much disease; considerable insanity; and many paupers. It makes the world a less desirable place for the human race than it would be without liquor.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Alcohol.
II. Symptoms.	Insanity and partial insanity.
III. Cause.	Effect of alcohol on brain.
IV. Prevention.	Total abstinence.

CASE NO. 39

John L., aged fifty-seven years, a judge in a criminal court had tried a good many thousands of criminals. He said that most of the criminals showed a common cause for their crimes.

What do you think was the common cause of their crimes?

DISCUSSION—CASE NO. 39

The common cause of their crimes was alcohol. This case tells the same story as all of the others. Alcohol does do a great deal of harm.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Alcohol.
II. Symptoms.	Crime.
III. Cause.	General demoralizing effects of alcohol.
IV. Prevention.	Total abstinence.

CASE NO. 40

In a school in Chicago, out of one hundred and twenty-five who used a certain substance only two were able to keep up with the class. Out of two thousand four hundred and two school children in Chicago, who used this substance, only 6 per cent. could keep up with the class.

What do you think the substance was?

DISCUSSION—CASE NO. 40

The substance was alcohol. The same story over again. Alcohol is bad for a great many reasons as you have already seen.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Alcohol.
II. Symptoms.	Failure of pupils.
III. Cause.	Alcohol dulls brains.
IV. Prevention.	Total abstinence.

CASE 41

During the Boer War the officers in South Africa complained a great deal about the condition of the recruits that came from England. Instead of being alive and vigorous, the men were listless and sleepy. All that these men wanted to do was to dodge the officers and go to sleep. The officers said it would take three years of feeding and drilling to get the men fit to be soldiers.

Why were the soldiers who came from England weak?

DISCUSSION—CASE NO. 41

They were weak because they had been using tobacco. The nicotine in the tobacco had dulled their brains and made them listless, dull, and weak. It had taken all of the life out of them. That is what it does to every one who uses it. People who use it do not know that it has that effect because their brains are dulled by it and they cannot judge.

Usually people of this kind keep on weakening themselves with tobacco until they either have to quit or until they die several years before they ought to die. It often weakens people so that they get some other sickness. That may carry them off or it may make life very miserable for them.

These soldiers were fortunate in having a chance to get into good condition again. Once the average person gets himself out of condition it is hard for him to get back and do his work at the same time. He never recovers fully. When a person has been weakened by tobacco the only thing for him to do is to stop and try to get into good condition again by leading a very perfect sort of a life. That means he must have regular habits of sleep, exercise, eating, bathing, and working. He must do everything by the clock. The best thing to do is not to use tobacco at all. Then you will not become that sort of a person. You will want to take exercise and do things to keep yourself in good condition.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Nicotine.
II. Symptoms.	Weakness and listlessness.
III. Cause.	Nicotine dulls the brain.
IV. Preventive treatment.	Get into good condition.
V. Prevention.	Abstain from tobacco.

CASE 42

At Yale University the students were divided into four groups according to their standing in class; only 24 per cent. of the first group used a certain substance; 85 per cent. of the lowest group used it.

What do you think this substance was?

DISCUSSION—CASE NO. 42

The substance was tobacco. You can see what the effect was on the minds of the college students. It has the same effect upon the minds of every one else. When nicotine is taken into the body it is absorbed into the blood and circulated to the brain. At the time a person is smoking or chewing the brain seems to be soothed. In reality, it is only dulled. While it is being dulled, it is being weakened.

The outlook for these two groups of men is very different. The chances are that the men in the first group will be the leading men in our nation in a few years. The men in the second group are not as apt to be successful. Of course they could increase their chances for success by stopping tobacco and keeping themselves in excellent condition.

If any one ever tells you that your standing in school does not make any difference, you must not believe him. The facts are that the men who stand high in college are the men who later make a success in life. Of the honor men who graduated from Harvard only 20 per cent. are not to be found in the directory of successful people of the United States. This directory is called "Who's Who."

If you are wise, you will not have anything to do with the habit-forming drugs which effect your brain. Your brain is a very poor thing to fool with. That is what you are doing when you use any of the habit-forming drugs: alcohol, nicotine, theine, or caffeine.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Nicotine.
II. Symptoms.	Difference in standing.
III. Cause.	Nicotine dulls the brain.
IV. Prevention.	Avoid all habit-forming drugs.

SUMMARY NO. 5

The last ten cases have all been about the use of alcohol and tobacco. From them we may learn several general lessons.

1. Total abstinence is the best policy to pursue toward all of the habit-forming drugs.

2. Alcohol is objectionable because it injures a person's mind, body, personality, and character.

3. Alcohol is injurious to any community, state, nation, and the world as a whole. It produces disease, accidents, inefficiency, crime, insanity, and pauperism.

4. Alcohol makes people short lived.

5. The injurious effects of alcohol are handed down from parent to child.

6. The correct policy for you to pursue in regard to tobacco is total abstinence.

7. Tobacco is objectionable because it interferes with growth, interferes with the working of the mind, leads to disease, causes a great deal of loss of time, and handicaps the user in the battle of life.

CASE 43

Anna C., aged seven years, was playing around a manure pile while the men were pitching it upon wagons. By accident one of the men ran a pitchfork about two inches into her foot. Her mother cleaned the foot up carefully and put turpentine on the wound.

What disease is the little girl in danger of getting?

DISCUSSION—CASE NO. 43

The little girl is in danger of developing tetanus. We have studied cases of tetanus before but we have not learned how the disease is spread. The germs of the disease are found in horse manure. Consequently, any wound which is closed to the air and has been contaminated by horse manure, as this wound from the pitchfork and the manure pile probably was, is a very dangerous wound. Any soil which contains any manure is apt to contain the germs of the disease.

This girl did develop the disease ten days later and after going through all the stages of convulsions and lockjaw, died. After a person gets the disease, no treatment for it is effective. As you know, tetanus serum is a very good preventive treatment and should be injected for every deep wound that is closed to the air.

The disease should be kept from occurring at all. Horse manure should be as carefully disposed of as any sort of sewage. There should be no open manure piles and manure boxes. Manure should be packed in covered galvanized iron barrels or cans. Not only do the germs of tetanus occur in it but it affords a place for flies to develop. If all manure were covered so that the flies could not get at it, there would be no flies.

Flies are great carriers of disease. They get into the excretions from persons who have all sorts of diseases, measles, scarlet fever, whooping cough, infantile paralysis, dysentery, typhoid fever, and cholera. They get the germs of these diseases on their feet and leave them wherever they alight. It often happens that such a germ-laden fly alights on a human being's food. Then he develops the disease the fly was carrying around on his feet. See to it that manure is properly disposed of in your community. Remember that it is a menace to public health. Keep your streets washed up and swept up. The greater part of horse manure is made up of germs.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Tetanus.
II. Symptoms.	1. Convulsions. 2. Lockjaw.
III. Cause	1. Germs of tetanus attacking spinal cord. 2. Germs of tetanus in horse manure. 3. Germs of tetanus get into body in deep wounds which are closed to the air.
IV. Treatment.	None.
V. Preventive treatment.	Anti-tetanus serum in every case of deep, closed wound.
VI. Prevention.	Proper disposal of manure.

CASE 44

Mollie R., aged six months, began to fret and toss on August 16th. She would take only half of her feedings, and seemed as hot as the air outside. At night she slept very little and cried a great deal. On the seventeenth, she continued the same way and had three loose bowel movements, all a little bit greenish and accompanied by some mucus and green material. On the eighteenth, she refused to take any of her feedings and had four similar movements. A friend told the mother that the milk was not right. She had been giving the baby half store milk and half water. The friend said to give the baby eight ounces of barley water every three hours. From the eighteenth to the twenty-second the baby was given the barley water. The trouble did not disappear.

What will happen, if the baby keeps on having barley water only?

DISCUSSION—CASE NO. 44

If a baby is given only barley water for any length of time, it will starve to death. In previous lessons you have learned that a person needs a carefully balanced ration; that is, a ration which is worth so many calories or heat units when the fuel value of the food is taken into account. It must also contain a few ounces of mixed proteins, a little mineral matter, and portions of fat and carbohydrate as well as protein.

The child has summer diarrhœa. That means germs are attacking the child's intestines and making them move the contents along too rapidly. The general sickness, fever, restlessness, and loss of appetite show that poisons from the germs were being absorbed from the intestines and circulated all over the body.

The disease or group of diseases which are called summer diarrhœa is spread by milk, especially store milk. You have learned before how important it is that people have pure milk. This is doubly true of babies.

It makes considerable difference how a case of summer diarrhœa is treated. If things are given to check the diarrhœa, the baby usually dies. If things are given to clean the baby out and to wash out its bowels, the baby usually gets well. This baby was given things to check the diarrhœa. It promptly developed convulsions and died.

Thousands of babies are lost in the United States from this cause every year. Avoiding bottle feeding altogether and feeding from the breast is the greatest measure of prevention that can be taken. If the baby has to be fed on artificial feedings, pure cow's milk modified to suit each baby should be used. The only person who knows how to modify milk is a doctor. It is perfectly fair to say that not all of them know. Consequently, if the baby is to be fed artificially, the feeding should be supervised by a doctor who does know how.

In cities specialists for babies and children can usually be found. If a person is too poor to patronize such a specialist, they can be usually seen at free dispensaries and hospitals. In the country, the family doctor will always tell you whether he understands infant feeding or not, and if he does not, will recommend some one else.

The best cow's milk is certified milk. The next best is pasteurized milk. Any milk that is not certified should be pasteurized before being given to a baby. That will prevent a great many cases of summer diarrhœa.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Infant diarrhœa.
II. Symptoms.	Diarrhœa.
III. Cause.	1. Germs attacking intestines. 2. Germs come from impure milk.
IV. Treatment.	Clean intestines out.
V. Prevention.	1. Breast feeding. 2. Certified milk 3. Modified milk. 4. Pasteurized milk.

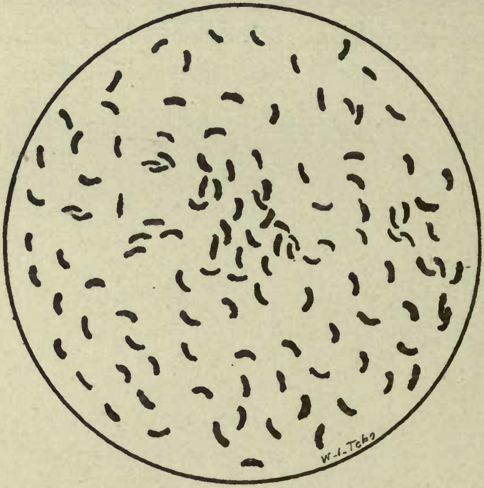
CASE NO. 45

Mr. R. D., aged twenty-two years, a grocer in San Francisco, was taken ill on August 1st. He had diarrhœa and felt weak and feverish. On August 2d his bowels ran off like water every few minutes. He became very sick. Suddenly about ten o'clock in the morning he fainted. When he revived, he lay in a cold sweat and was absolutely prostrated. He sank gradually into a stupor and died at 3 P. M.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 45

The sudden onset of diarrhœa and the fact that the man is so very sick and prostrated right at the start is typical of cholera. Cholera germs were found in the discharges from this man's intestines. The disease is spread from these intestinal discharges. Fingers are contaminated with the discharges and flies get into them. If the discharges are not properly disposed of, other animals, such as rats, get into them. From fingers and flies the discharges get into food. When people eat the contaminated food, they get the disease. The disease occurs only in countries where sewage is improperly disposed of, such as China and India. There streams are polluted, and the germs get into the drinking water. Then whole cities get it.



The germs of cholera

Once a person has the disease, very little can be done. Most of the people who get it die in the first three days. If they get past the first three days, the outlook is good.

The disease can be prevented by isolating cases of the disease. Our marine hospital service keeps cases out of the country by isolation and by allowing no one to land from a ship where there has been a case of cholera until they see whether any new cases develop. This affair of holding up a ship on account of the disease is called quarantining it.

Another remedy for the prevention of the disease is the proper disposal of sewage. If sewage is allowed to run into streams which are used for drinking water, all of the diseases which come from the intestinal tract are bound to occur. Large and small cities should have a system of sewers. These sewers should empty into filter beds where the germs in the sewage will be destroyed. As you know, the great bulk of sewage is made up of germs. The sewage should not be poured unfiltered into streams.

The vaccine against cholera is very effective. During the war between Russia and Japan all of the Japanese soldiers were vaccinated against cholera. Almost none of them had the disease. The Russians were not vaccinated. Thousands of them died from it. In case of an epidemic, every one who has been exposed or may be exposed, should be vaccinated with the cholera vaccine.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Cholera.
II. Symptoms.	1. Severe diarrhœa. 2. Extreme prostration.

III. Cause.	1. Cholera germs attacking intestines. 2. Poisons from cholera germs circulating all over body.
IV. Treatment.	None.
V. Preventive treatment.	1. Vaccine against cholera. 2. Proper sewage disposal. a. Sewers. b. Filter beds.

CASE NO. 46

The city of A. takes its supply of water from the B. River. Several cities above A. on the B. pour their sewage into it. Before the water is used at A. it is run through a filter plant where the water is made to pass through filters of sand and stone. After the water gets through the filters it is treated with hypochlorite of lime, a chemical which kills off most of the germs that remain in the water.

The city of C. thirty miles below A. on the B. River gets its water by pumping it from deep wells which have been sunk down alongside of the river.

Which city has the better plan for getting its water?

DISCUSSION—CASE NO. 46

It is a poor plan to take drinking water from streams. They are often carriers of disease. It is much better to dig deep wells alongside of the stream and take the water from them. That is done at C. The water has the benefit of a natural filter where the water filters through a very large body of earth. In an artificial filter it goes through only a few feet of sand and rock. These natural filters are so much larger than any artificial filtering plant that they are better. They are also much cheaper to build and to operate. The cost of pumping the water is not as much as the cost of operating a filtration plant.

Small villages and country houses which cannot have a system of sewers can have privies which will dispose of sewage properly. A privy may be made by digging a hole in the ground. The hole should be located at least two hundred feet from the well and so placed that the water will drain away from the well. The bottom of the hole should contain three feet of sand. Over this hole in the ground the privy house should be made. It should be provided with self-closing seats, self-closing doors, and screens so that no flies can get into it. The seats and door should always be kept closed. Pails of sand should also be set inside of the house. Whenever any sewage is deposited, it should immediately be covered over with sand. At no time should any sewage be exposed so that flies can get at it. The sewage should be caught in large galvanized iron pails. These pails may be emptied by scavenger wagons at night. If the sewage is scattered out over a field, the germs in it are killed by the sunlight and drying. If the sewage is buried in a privy hole, a lasting menace to health is established or, if it is scattered over the garden, the germs in it get on vegetables and from them into food before the germs have been killed out.

Wells should be located on spots higher than privies or barn yards. Otherwise germs will drain in with the surface water.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Wells better than filter plants.
II. Symptoms.	1. Purer water. 2. Cheaper water.
III. Cause.	Purer water—better filtration. Cheaper water—pumping less expensive.
IV. Prevention and treatment.	1. Have wells rather than filter plants. 2. Keep streams pure. a. By good sewerage systems. b. By sanitary privies.

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*Anyone interested in the question of natural versus artificial filtration should investigate the water works at Camden, N. J.

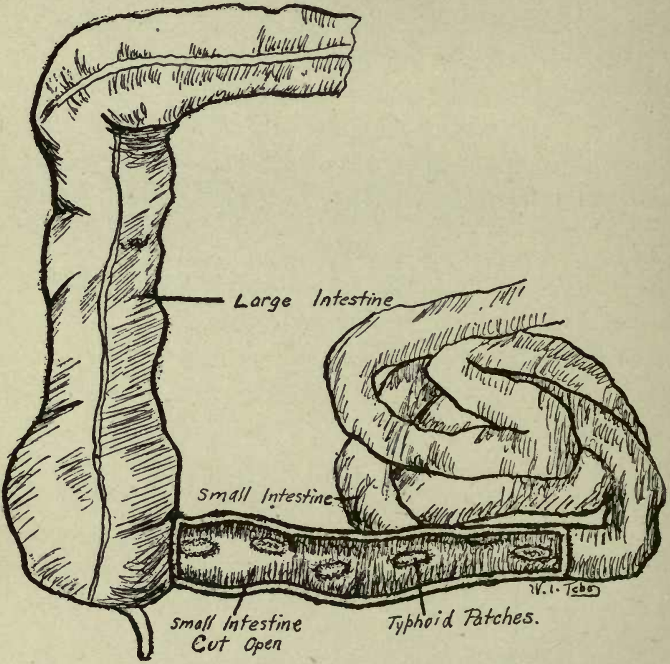
CASE NO. 47

George W. of M. H., aged seventeen years, awoke September 1st feeling rather bad. He did not have much appetite for breakfast. During the afternoon his head began to ache, and he had pains in his back. He felt out of sorts this way for over a week. Each day he felt a little worse than the day before, but he took two or three headache tablets each day which made him feel less miserable. In this way he managed to keep going about. On the tenth day he felt a sudden severe pain in the pit of the stomach. He vomited and had to lie down.

What do you think is the matter with the man?

DISCUSSION—CASE NO. 47

The slow onset is characteristic of typhoid fever. In typhoid fever the germs attack the intestines and form small ulcers in them. It sometimes happens that one of the ulcers perforates and makes a hole in the intestine. That is what is the matter here and why the man had a sudden pain in the pit of the abdomen. He chanced to fall into the hands of a very skillful doctor who suspected that the man had had typhoid fever and had a perforation of the intestines. An


Large Intestine
Small Intestine
Small Intestine Cut Open
Typhoid Patches.
W. I. Tebo

The germs of typhoid fever make sores of this kind in the small intestines operation was immediately resorted to. The hole in the man's intestines was found and sewed up. The germs which had poured out into his abdomen were allowed to drain out. For two months he was a very sick man but pulled through.

The germ which causes typhoid fever is the typhoid bacillus. It is spread in very much the same way that the germs of cholera are spread; that is, from the discharges of the intestines by means of flies, fingers, milk, drinking water, and food. Typhoid is always most prevalent in the fall when there are a great many flies. The disease is kept alive by human carriers. Some people have the germs in their intestines after they get well and keep carrying them around and give them to other people. Typhoid Mary is known to have caused over a hundred cases of typhoid and to have caused more than twenty deaths.

This man caught the disease from drinking water. Towns above M. H. on the creek from which it took its water sewered into the streams. Almost every fall M. H. had an epidemic of typhoid.

Good management and good nursing count for a great deal in the treatment of typhoid, but many of the people who get typhoid die of it. Cases of walking typhoid, such as this one, are especially bad because the person's strength is all gone and he has none left to fight the disease with.

The preventive treatment for the disease, the typhoid vaccine, is very effective. Since the vaccine against typhoid fever has been used in the army, they have had almost no cases of the disease. Formerly they had a great many. There is no doubt that its use should be compulsory all over the United States. If it were, typhoid would soon disappear. If you have not been vaccinated for typhoid, get vaccinated!

The disease can be prevented from occurring altogether by the proper disposal of sewage, procuring pure milk and water, and keeping carriers of the disease shut up.

This case shows that patent medicines are not a good thing. If this man had not been dulling his brain with headache powders, probably he would have realized that he was sick and would have gone to a doctor. Very few patent medicines fail to contain a drug that affects the brain.

SUMMARY OF PRACTICAL POINTS

I. Diagnosis.	Typhoid fever with perforation of the intestines.
II. Symptoms.	1. Symptoms of a slowly starting infection. 2. Sudden pain in abdomen. 3. Vomiting.
III. Cause.	1. Typhoid germs attacking small intestine. 2. Poison from germs circulating all over the body. 3. Germs made ulcers in small intestine. 4. An ulcer perforated. 5. Germs carried by human carriers.
IV. Treatment.	1. Operation to sew up perforation and drain abdomen. 2. Good nursing.
V. Preventive treatment.	1. Early diagnosis and treatment. 2. Avoiding patent medicines.

VI. Prevention.
1. Proper disposal of sewage.
2. Prevention of flies.
3. Compulsory typhoid vaccination.

SUMMARY 6

The last five cases have all been about diseases which are spread from the discharges of the intestinal tract. We have considered the diseases tetanus, infant diarrhœa, cholera, and typhoid fever. People or animals carry these diseases around in their bodies and shed the germs in the discharges from the intestines. Then the germs get to other people by means of impure drinking water, impure milk, or food that has been contaminated with the germs through the agency of fingers, flies, or other intermediate articles. In the prevention of this group of diseases, we learned how important it is that sewage be disposed of properly and how important it is that pure drinking water and pure milk be secured. Different things have to be done to prevent each disease.

From the first case, that of the little girl who got tetanus from the stab of a manure fork, we may learn several general lessons.

1. Tetanus is spread in horse manure.

2. Any soil containing horse manure is apt to contain the germs of tetanus.

3. The germs of tetanus will not grow, if exposed to air.

4. The germs of tetanus grow in deep, closed wounds.

5. Tetanus serum should be given in every case of a deep, closed wound.

6. Horse manure should be disposed of just as carefully as

other sewage. Streets should be washed and swept every day. Manure in stables should be so kept in that no flies can get into them.

7. Flies develop in horse manure.

8. Flies carry a great variety of diseases around on their feet by getting the germs on their feet.

The second case was about the baby who had infant diarrhœa. From it we may learn several general lessons.

1. The germs in the impure milk cause summer diarrhœa.

2. Summer diarrhœa may be prevented in the best way by substituting breast feeding for bottle feeding.

3. Certified milk is the only milk that is pure enough for babies.

4. Certified milk should be modified to suit each baby's particular requirements.

5. Pasteurized milk usually has the germs in it cooked to death. That can be done at home.

6. Store milk is usually impure.

7. Any milk can be made impure by leaving it off the ice in a warm place for a few minutes.

8. All milk should be kept on ice in warm weather and should be kept cold in cold weather.

9. A cheap refrigerator can be made from a tobacco pail and a can.

The third case was about the man who had cholera. From it we may learn several general lessons.

1. Cholera is a disease which occurs, if sewage is not properly disposed of.

2. Sewage that is not properly disposed of gets into drinking water.

3. Epidemics of various diseases occur when drinking water is contaminated.

4. Such diseases can be prevented by systems of sewers which carry off the sewage and empty it into filter beds where the germs are killed.

5. The vaccine for cholera prevents cholera. It should be used wherever the disease breaks out.

From the fourth case, the one which compared the water supplies of A. and C., we may learn several general lessons.

1. The C. plan of securing a city water supply is a very good plan.

2. The C. plan consists in digging deep wells near a river and allowing the earth to act as a natural filter.

3. At C. this plan has been found to be better than the plan of having filtration plants.

4. Whichever plan is used, streams should not be polluted with sewage.

5. Small villages should dispose of their sewage by the use of sanitary privies, scavenger wagons, and the scattering of sewage over fields.

6. Sewage should not be buried in a hole in the ground or put on gardens because the germs might get onto food or into drinking water.

From the fifth case, that of the young man who had walking typhoid and a perforation of the small intestine, we may learn several general lessons.

1. Typhoid fever is carried around by human carriers.
2. Carriers of the disease should not be allowed at large.
3. The vaccine against typhoid fever prevents the disease.
4. Typhoid vaccination should be compulsory.

5. The proper disposal of sewage prevents the disease from occurring at all.

6. Patent medicines are bad things. They dull the brain and keep a person from realizing the truth about himself.

Case 48

In 1880 John S., aged twenty-two years, was taken sick with typhoid fever. As soon as the doctor said he had typhoid fever all food except clear soup and a glass of milk four times a day was stopped. As he lay in bed he tossed with fever and often called for water. He was given only half a glass of warm water every three hours, a quart daily. At the end of six weeks he was a living skeleton. He was so weak that he could not hold up his head.

In 1912, the son of John S., John S., Jr., aged twenty-two years, was taken sick with typhoid fever. The doctor ordered that he be given all of the water he wanted and spent some time in figuring out a diet which he might be given each day. The only meat allowed was bacon. All foods containing hard particles such as jam and all foods containing cellulose such as lettuce and the fruits were omitted. He had almost everything else. The fever lasted only four weeks. During that time the patient was fairly comfortable. At the end he had gained seven pounds and was not particularly weak.

Why the difference in the two cases?

Discussion Case 48

The first man was suffering from typhoid and starvation; the second from typhoid only. In 1880 doctors had no way of telling how much food nor what kind of food a person's body needs to maintain life. They did not realize that they were starving their patients. Since that time doctors and scientists have measured the value of all foods in terms of calories or heat units. An egg when burned in the body or elsewhere gives off seventy-five calories; a glass of milk, one hundred and sixty calories. By consulting the adjoined tables you may see that the values of all common foods have been determined in terms of calories. It has also been determined how much people of different sizes, doing various amounts of work need. As you will see a baby requires considerably less than a boilermaker. The substances in foods have been divided up into four groups; fats, proteins, carbohydrates, and mineral matter. Milk contains all of them. In milk the fat is cream; the protein is the curd which you see in cheese; the carbohydrate is milk sugar; and the mineral matter is made up of a small amount of minerals found in the earth. All are, more or less, completely dissolved in the water which constitutes a large part of milk. By consulting the tables you will see that different foods contain different percentages of the four different substances. We call such a food as milk which contains all of the elements a well-balanced food. Such a food as sugar or starch which contains only carbohydrate is an unbalanced food. You must not only eat enough but the entire diet which you eat each day must be well balanced in regard to all four of the elements. The best way to be sure of getting the right things is to eat a variety of foods. When you are eating enough food and are getting the right kinds we say that you are taking a balanced ration; otherwise, an unbalanced ration. In this case the doctor avoided foods that might irritate the typhoid ulcers in the intestines and gave the man enough food and drink to live on. The first man literally lived on his own body. Many people partially starve themselves. You can avoid doing so by figuring up your meals occasionally and seeing whether your appetite leads you to take a well balanced ration. Usually, it does. Sometimes, it does not.

SUMMARY OF PRACTICAL POINTS

Diagnosis	1. Balanced vs. Unbalanced Ration.
Symptoms	2. Loss of weight and strength.
Cause	3. Unbalanced ration.
Treatment	4. Balanced ration.
Prevention	5. Balanced ration.

DAILY FOOD REQUIREMENTS

ADULT	BODY WEIGHT	CALORIES PER POUND	TOTAL CALORIES	TOTAL GRAMS PROTEIN
At rest in bed	150 lbs.	12	1800	72
Slight activity	"	15	2200	88
Light work	"	17	2600	115
Moderately hard work	"	20	3000	120
Very hard work	"	23–30	3500–4500	140–180
CHILD				
Age 0–6 months	7–15 lbs.	42.40	300–600	1 gram per lb.
" 6–12 "	15–20 "	40	600–800	35–40
" 2 years	25 "	36	900	42
" 4 "	35 "	34	1200	55
" 8 "	50 "	28	1400	60
" 12 "	75 "	22	1600	75

1 gram proteid = 4.1 calories 1 gram carbohydrates = 4.1 calories

1 gram fat = 9.3 calories

(1 gram = 0.03527 oz.) (28 grams = 1 oz., approximately)

THE COMPOSITION OF FOODS

NAMES OF FOODS	AMT. BY WEIGHT	COMMON MEASURES	CAL-OR-IES	GRAMS			% MIN-ERAL
				PRO-TEIN	FAT	CARBO-HYD-RATES	
Foods Containing a Large Share of Protein							
Milk	8 oz.	a glass	160	7.5	9.5	12.	.7
Skimmed milk and buttermilk	8 oz.	a glass	80	7.5	1.	11.5	.7
Condensed milk sweetened	20 gms.	a heaping teaspoon	70	2.	2.	11.5	1.9
Condensed milk unsweetened			35	2.	2.	2.5	
Cheese Skim-milk	15 gms.	one-inch cube	45	4.5	2.5	.5	3.8
Cheese Cream			65	4.	5.	.5	
Cheese American			70	4.	5.5	....	
Eggs (whole)	50 gms.	one	75	6.5	5.	......	.9
" (yolk)	15 gms.	one	55	2.5	5.	......	.....
Beef tea	5 oz.	a teacup	5–20	1.–4.5	....	.5	.5
Fish lean (cod, flounder)	50 gms.	a heaping tablespoon	35	8.5	....	....	.8
Fish fat (shad, salmon)			105	11.	6.5	....	
Meat lean	50 gms.	a slice 5x3x¼″	70	11.5	2.5	....	.7
Meat medium fat			150	11.5	9.	....	
Meat fat			200	8.5	18.	....	
Oysters	16 gms.	one	8	1.	.2	.5	1.1

THE COMPOSITION OF FOODS

NAMES OF FOODS	AMT. BY WEIGHT	COMMON MEASURE	CALORIES	GRAMS			% MINERAL
				PROTEIN	FAT	CARBOHYDRATES	
Foods Containing a Large Share of Fat							
Cream, thin (20 per cent.)	16 gms.	a tablespoon	30	.5	3.	.5	.5
Cream, thick (40 per cent.)			60	.5	6.	.5	
Butter	10 gms.	a pat or ball	80	......	8.5	......	3.
Ice Cream	40 gms.	a heaping tablespoon	135	1.5	9.	11.	.6
Olive oil	4 gms.	a teaspoon	37	......	4.	......	.....
Almonds	25 gms.	a heaping tablespoon	165	5.	13.5	4.5	1.1
Foods containing a Large Share of Carbohydrates							
Bread, white or graham	25 gms.	one slice 4 x 4 x ½″	70	2.3	.5	13.	1.1
Vienna roll	40 gms.	one	115	3.5	1.	22.5	1.1
Crackers (Uneeda)	7 gms.	one	30	.5	.5	5.	2.1
Cereals, cooked moist	40 gms.	a heaping tablespoon	35	1.	....	7.	2.1
Shredded wheat	30 gms.	one	110	3.	.5	23.	1.
Gruels (cereal)	8 oz.	a soup plate	75	2.5	1.	14.	2.1
Thickened or Cream Soups	8 oz.	a soup plate	160	5.5	4.5	24.	1.5
Macaroni	25 gms.	a heaping tablespoon	25	1.	.5	4.	1.3
Potato, boiled or baked	95 gms.	one medium	90	2.	....	20.	.8
Potato, mashed	35 gms.	a heaping tablespoon	40	1.	.1	6.	.8
Rice, boiled	30 gms.	a heaping tablespoon	35	1.	....	7.	.4
Corn, canned	35 gms.	a heaping tablespoon	35	1.	.5	6.5	.7
Peas, fresh	35 gms.	a heaping tablespoon	40	2.5	.1	5.	1.0
Lima beans, canned	25 gms.	a heaping tablespoon	20	1.	....	3.5	1.7
Squash	35 gms.	a heaping tablespoon	20	.5	....	3.5	.4
Sugar	8 gms.	a heaping teaspoon	33	......	....	8.	0.0
Fruit jelly, sweetened	50 gms.	a heaping tablespoon	160	.5	....	38.5	.....

THE COMPOSITION OF FOODS

NAMES OF FOODS	AMT. BY WEIGHT	COMMON MEASURE	CAL-OR-IES	GRAMS			% MIN-ERAL
				PRO-TEIN	FAT	CARBO-HYD-RATES	
Honey	10 gms.	a heaping teaspoon	33	......	....	8.	0.0
Custard	40 gms.	a heaping tablespoon	55	2.5	.5	9.	.5
Sponge cake	20 gms.	a slice 2 x 4 x ½″	75	1.5	2.	13.	1.5
Pudding	45 gms.	a heaping tablespoon	80.	2.	2.	13.	...
Foods Valuable for Bulk and Mineral Matter							
Apple, pear	120 gms.	one medium size	75	.5	.5	17.	2.
Apple sauce	45 gms.	a heaping tablespoon	70	......	.5	16.5	.....
Banana	100 gms.	one medium size	100	1.5	.5	22.	.6
Orange	130 gms.	one medium size	70	1.	....	15.	.4
Strawberries	100 gms.	a medium saucerful	40	1.1	.5	7.5	.6 .2
Dried figs, dates, raisins	100 gms.	a medium saucerful	350	2.5	3.	76.	2.2
Cabbage	....	....	....	......	....	......	.9
Lettuce	....	....	....	......	....	......	.8
Radishes	....	....	....	......	....	......	.....
Spinach	....	....	....	......	....	......	2.1
Celery	....	....	....	......	....	......	.8
Onions	....	....	....	......	....	......	.5

CASE 49

The Rockefeller Commission estimates that there are two million people in the southern states of the United States who have a certain disease. These people are not sick in bed, but they go about listlessly half doing their work; looking pale, weak, and stupid. Many of them are stunted in growth. Most of them are poor. They do not live as long as other people. They are generally backward. This costs the south a great deal.

What disease do these people have?

Discussion—Case 49

These people have hookworm. Hundreds of small worms live in the intestine of each victim. You can see the effect. Hookworm costs the south millions of dollars and thousands of lives every year.

Many of the eggs of the worms get into the intestinal discharges. The disease is spread therefrom when the discharges are not properly disposed of in a sewer or in a sanitary privy. If the eggs be deposited on the soil, as often happens among these people seventy-five per cent. of whom have no privies, the worms hatch out and get into people's bodies by burrowing through bare feet. They also enter the body in food and in water.

It is easy to cure the disease by using the drugs thymol and chenopodium. Like all drugs, these drugs should be given only under the supervision of a doctor. No liquor or patent medicine should be used at the same time because it may cause poisoning. Otherwise, the treatment is safe.

It is hard for one to comprehend just how real a case of hookworm is until after the thymol treatment he has seen a weak, pale, stunted, stupid patient freed of hundreds of the small worms wriggling and seething in a mass and then has seen the patient wax pink and strong; grow and become bright and lively.

The disease can be prevented by having suspected cases examined by a doctor and having sewage properly disposed of. To secure suspected cases all of these two million people have to be taught. Although very few of them can read the south is doing this rapidly.

SUMMARY OF PRACTICAL POINTS

Diagnosis	Hookworm disease.
Symptoms	General Backwardness. A. Listlessness B. Shiftlessness C. Pallor D. Weakness E. Stupidity F. Lack of growth. G. Poverty H. Shortness of life.
Cause	Hookworm
Treatment	1. Thymol or Chenopodium. 2. Avoiding alcohol at time of treatment.
Preventive Treatment	Thymol or Chenopodium.
Prevention	Proper disposal of sewage.

GLOSSARY

KEY TO PRONUNCIATION

a as in māte, senȧte, făt, ärm, a̤ll, ȧsk, whạt, câre.
e " mēte, ȇvent, mĕt, hẽr, thêre, obe̱y.
ee " shēēt.
i " līce, ȋdea, ĭt, sĩr, machïne.
o " hōld, ȏbey, nŏt, mo̤ve, wọlf, sȯn, hôrse, wõrk.
oo " fōōd, fo͝ot.
u " ūse, ȗnite, ŭp, fûr, ru̇le, pụll.
y " flȳ, mẏself, babў, mỹrrh.
au " author.
aw " saw. ew as in new. oi as in boil.
oy " boy. ou " out. ow " cow.
c (unmarked) as in call; ç " mice. ci (=sh) " gracious.
ch (unmarked) " child; çh " chaise; ch(=k) " school.
g (unmarked) " go; ġ(=j) " cage.
ng as in ring. ṉ(=ng) " ink. ph(=f) as in phantom.
ş(=z) " is. si(=sh) " tension; şi (=zh) " vision.
th (unmarked) as in thin; th " then. ti (=sh) " motion.
x (unmarked) " vex; x̣(=gz) " exact.

ȧb′ scĕss (ab′-ses)
ȧ dŭl′ tẽr āte
ăn tĭ sĕp′ tĭc (an-te-sep′-tic)
ăn-tĭ-tŏx′-ĭn (an-te-toxs′-in)
ār′ ĭs tôl
ăt′ rȯ phy̆ waste away
bȧ cĭl′ lŭs (ba-sil′-us)
Bōr′ det (Bor′-day)
brŏn chī′ tĭs (brong-ki′-tis)
bū bŏn′ ĭc (bu-bon′-ik)
cȧff′ e̱ īne (kaf′-a-īne)
cĕr′ tĭ fied (cer′-ti-fīd)
cham′ ois (sham′-mĭ)
chŏl′ ẽr ạ (kol′-er-ah)
côr′ nē ạ (kor′-nee-ah)
dē fôrm′ ĭ ty̆ (de-form-ă-te)
dĕ lĭ′ rĭ ŭm
dē rānge′ mĕnt (de-rāng′-ment)
dī ärr hoe′ a (di-ar-e′-ah)
dĭph thē′ rĭ ạ (dip-thē′-re-ah)
dys pĕp′ sĭ a (dis-pep-se-ah)
ĕp ĭ dĕm′ ĭc (ep-e-dem′-ik)
ĕp ĭ lĕp′ tĭc (ep-e-lep′-tik)
Fâhr′ ĕn heit (fair′-en-hite)
fū′ sĕl (fuze′-l)
glăn′ dĕrs
groin′ the crease between the abdomen and thigh
hĕm′ ôrr hāge (hem′-or-aj)
hē rĕd′ ĭ ty̆ (he-red′-it-e)
hȳ pō chlô′ rĭte (hi-po-klo′-rit)
ĭm mūne′ (im-ūn′)

ĭm pair′ ĕd
ĭn-cī′-sĕd (in-sizd′)
ĭn cū bā′ tion (in-ku-ba′-shun)
ĭn dī gĕs′ tion (in-di-jes′-chun)
ĭn fĕc′ tion (in-fek′-shun)
ĭn flȧmm ā′ tion (in-flam-a′-shun)
ī′ sōl āte (i′-so-lāt)
lār′ ynx (lār′ inks)
lĕp′ rō sy̆ (lep′-ro-se)
ly̆m phăt′ ĭcs (limf-at′-iks)
măl ā′ rĭ a (mal-a′-re-ah)
mĕn ĭn′ gēs (men-in′-jez)
mĕn ĭn gī′ tĭs (men-in-ji′-tis)
mŏd′ ĭ fied
mōr′ phĭne (mor′-fin)
nĭc′ ō tĭne (nik′-o-tēn)
nī′ trāte (ni′-trāt)
o paque′ (o-pāk′)
păr′ ȧ ly̆ze (par′-ah-līz)
păr ȧl′ y̆s ĭs (par-al′-is-is)
pâr′ ă sīte (par′-ah-sit)
pās′ teur ize (pas′-tur-iz)
pĕr ŏx′ īde (per-oks′-id)
plague (plāg′)
pneu mō cŏcc′ ŭs (nu-mo-kok′-kus)
pneu mō′ nï ạ (nu-mo′-ne-ah)
prē cau′ tion (pre-cau′-shun)
prē dĭs′ pōse (pre-dis′-poz)
pŭs
quār′ ȧn tïne (kwor′-an-tēn)
qui′ nīne (kwi′-nīn)
rē′ crē′ āte (re′-cree′-ate)
săn ĭt ā′ tion (san-it-a′-shun)
sĕp′ sĭs
sep′ tĭc (sep′-tik)
spū′ tŭm
ster′ īle (ster′-il)
steth′ o scope (steth′-o-skōp)
strep to coc′ cus (strep-to-kok′-kus)
stry̆ch′ nĭn (strik′-nĭn)
tĕt′ ăn ŭs
the′ ïne (tay-ïne)
tĭnct′ ūre (tingk′-tūr)
tŏn′ sĭl
trā chō′ ma (trā kō′-māh)
tū bĕr′ cū lăr (tu-bur′-ku-lar)
tū bĕr′ cū lĭn (tu-bur′-ku-lin)
tū bĕr cū lō′ sĭs (tu-bur-ku-lo′-sis)
tȳ′ phoid (ti′-foid)
tȳ′ phŭs (ti-fus)
văc′ cïne (vak′-sēn)

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